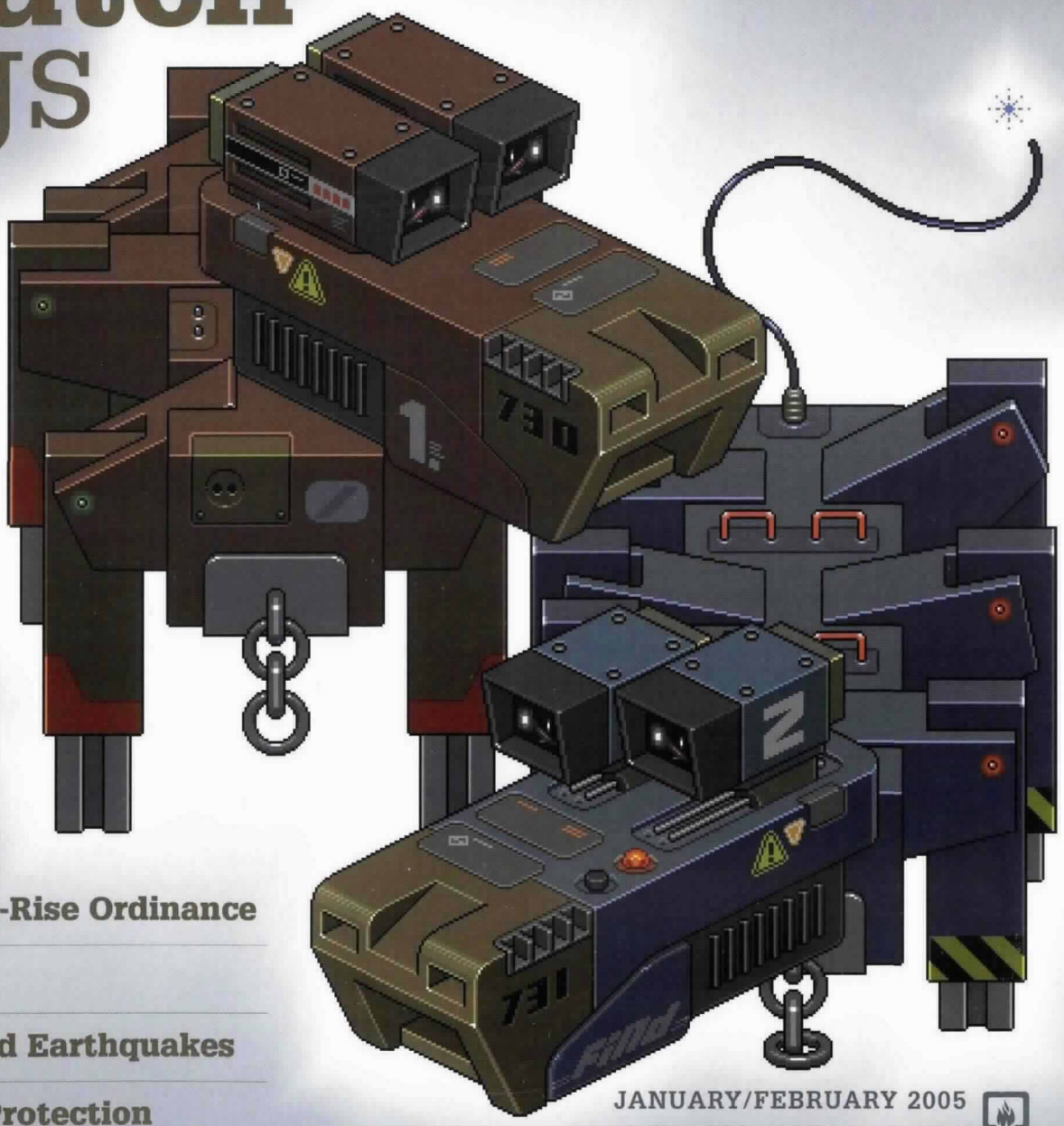
nfpa JOURNAL

THE NATIONAL FIRE PROTECTION ASSOCIATION

THE AUTHORITY ON FIRE, ELECTRICAL, & BUILDING SAFETY

Watch dogs

Armed with **NFPA 730** and **NFPA 731,** NFPA boldly enters the premise security systems arena



Chicago High-Rise Ordinance

NFPA 1600

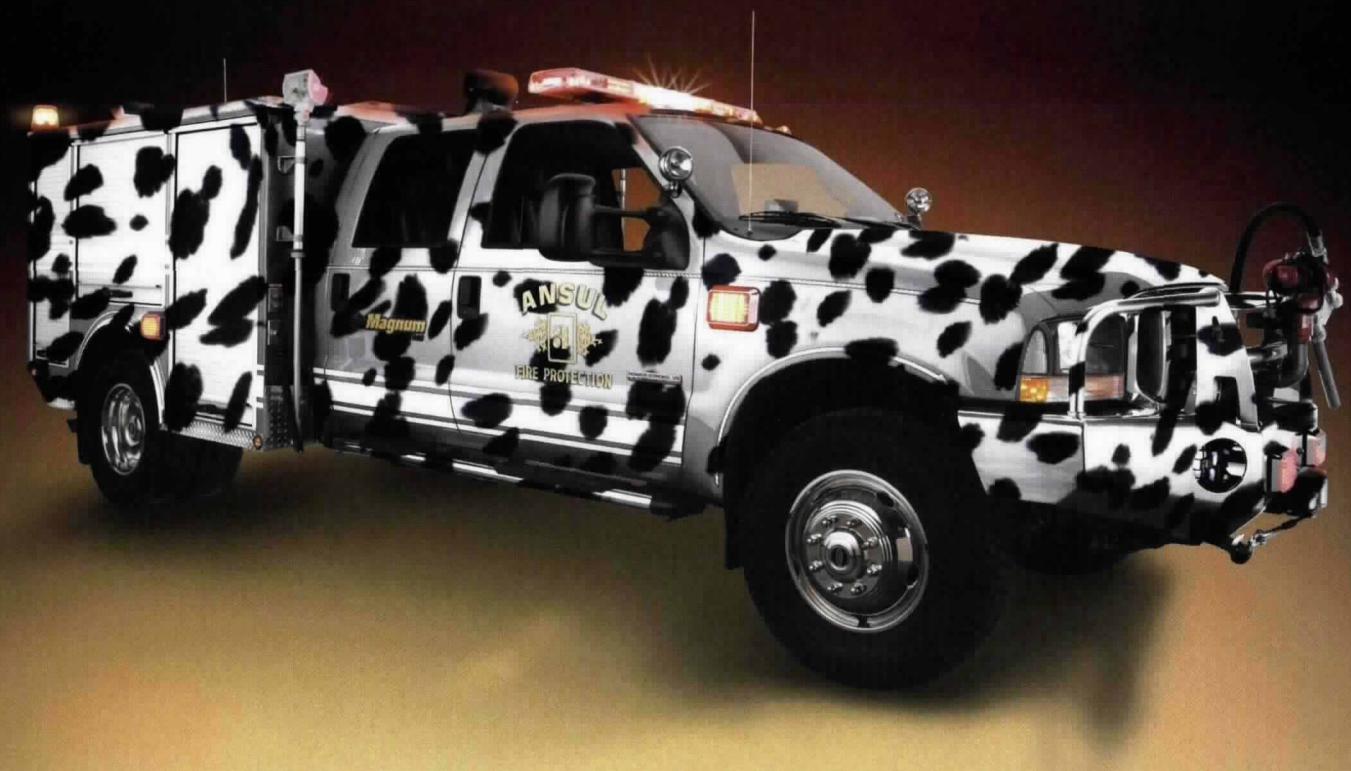
Sprinklers and Earthquakes

College Fire Protection

JANUARY/FEBRUARY 2005

WWW.NFPAJOURNAL.ORG

THE MODERN FIREFIGHTER'S BEST FRIEND.



Speed. Endurance. Performance that's ready to go when you are. It's all there in the revolutionary ANSUL® MAGNUM 440 Rapid Intervention Vehicle. One look tells you the ANSUL MAGNUM 440 is the new breed of firefighting vehicles. Compact size, four-wheel drive and 325-hp diesel V-8 makes it the complete multi-purpose platform, ideal for interdiction, haz-mat, emergency management and more. And for fighting fires, a powerful, remotely-operated Purple-K dry chemical/ANSULITE® AFFF twin-agent system turns a single operator into a machine with teeth, taking on chemical, petroleum, forest and other fires with equal success. Wherever. Whenever.

The ANSUL MAGNUM 440. No matter how tough the job, it's right at your side.

ANSUL® Innovative Fire Solutions | tyco / Fire & Security

www.ansulinfo.com/nfpa2 | 800-346-3626 | 715-735-7411

Circle 003 on Reader Service Card

GENESIS®

Now There's A Good Looking Family

When you have fire signals that look this good, well … you just can't help but be proud.

So beautifully do Genesis horns, strobes, chimes, and speakers blend in with their surroundings, you'll find they go virtually unnoticed … until the need for attention-getting performance really counts.

Whether those surroundings are in a landmark high-rise, a nearby strip mall, or any size building in between, you'll find that any product from our Genesis line of fire alarm signals has what it takes to protect life and property.

Genesis strobes feature selectable candela output with patented FullLight™ technology. Choose from strobes, horn-strobes, and speaker-strobes in wall and ceiling-mount models, as well as chime-strobes (wall model only).

Our horns feature high/low dB output with a wall-penetrating alternating frequency. Wall models include temporal horns, steady horns, and horn-strobes. These powerful signals are also available in ceiling-mount models.

Speakers and speaker-strobes – in wall and ceiling-mount models – have four selectable wattage taps providing a wide variety of signaling options.

Chimes feature high/low dB output, with temporal output or 60 strokes per minute. Choose from two wall models in chime or chime-strobe.

The Genesis series also provides you with a variety of options and accessories. And with the Genesis Signal Master, you also get precision synchronization and independent horn control.

Add to that an unparalleled range of field-configurable options, on-the-fly installation flexibility, and significant wiring cost savings, and you have a whole family of reasons to say "yes" to Genesis. For more information, contact EST at 888-EST-2DAY (378-2329) or visit our website: www.est.net.

EST™
EDWARDS SYSTEMS TECHNOLOGY
In Business for Life.®
www.est.net/NFPA

Circle 007 on Reader Service Card

▸ Special Hazards Solutions for Energy

"Finally, a suppression specialist with the systems and expertise to handle my toughest hazards.

SimplexGrinnell's world-class suppression systems are part of our industry-leading **OneStop™ Solutions Integration.** OneStop™ is a comprehensive delivery model offering you a total single-source solution across all your integrated security, fire and life safety, building communications and healthcare communications needs. Whether it's new construction, a retrofit application, or the servicing of any of your systems, OneStop™ lets us provide a complete best-in-class solution at **lower life-cycle costs.** And it's all available from SimplexGrinnell with **just one call.**

▸ Special Hazards Solutions for Energy

"My power plants operate with the risk of fire every day – fire that could interrupt or even devastate our business. To provide electricity with 100% reliability, we needed a fire protection solution just as reliable. So we turned to the leader in life safety – SimplexGrinnell. Their fire detection, notification and special hazards equipment operates seamlessly in complex sites to prevent potential events. And with field offices all over North America, they're helping us at multiple sites for a comprehensive and consistent approach to our challenges. It's a true end-to-end solution."

...I've never slept better."

1-800-746-7539
In Canada: 1-800-565-5400
www.simplexgrinnell.com

tyco
Fire & Security

SimplexGrinnell
Protecting People, Property and Peace of Mind™

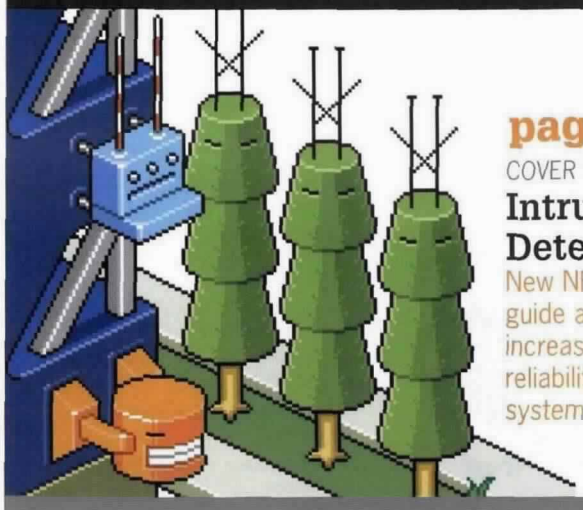
SPRINKLERS FIRE ALARM SUPPRESSION SECURITY COMMUNICATIONS SERVICES

Circle 020 on Reader Service Card

CONTENTS

JANUARY/FEBRUARY 2005 | VOL. 99, NO. 1

nfpa JOURNAL®



page 40

COVER STORY

Intruder Detected

New NFPA security guide and standard increase the quality and reliability of security system installations.

FEATURES

page 22

COLUMNS & DEPARTMENTS

COVER ART: **EBOY**

 NFPA Journal (ISSN 1054-8793) is a membership magazine published bimonthly, plus a Buyers' Guide annually in February, by NFPA, One Batterymarch Park, Quincy, MA 02269-9101. NFPA annual dues: members, $135 (includes $40.50 subscription to *NFPA Journal*), organization membership, $500. Periodicals postage rates paid at Boston, MA, and at additional mailing offices. POSTMASTER: Send address changes to *NFPA Journal*, NFPA, P.O. Box 9101, Quincy, MA 02269-9101. All issues of *NFPA Journal* are available in microfilm from University Microfilms, International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

JOURNAL®
nfpa

Volume 99/Number 1

Publisher
Kathleen M. Robinson

Executive Editor
Stephen D. Murphy

Managing Editor
John Nicholson

Art Director
David Yount

Production Manager
Adrienne M. Albrecht

Editorial Secretary
Liz MacDonald

Associate Publisher/Director of Marketing and Sales
T. R. Fitzpatrick

Advertising Traffic Manager
Dorinda Fergason

Advertising Systems Manager
Susan Richard

Online Advertising
Lynne Grant

Advertising Sales Assistant
Maureen Kean
(617) 984-7520

BPA INTERNATIONAL

Advertising Sales Offices

New England
Merrie Lynch
CEL Associates
(781) 848-9306
Fax (781) 848-2063
adsalesml@nfpa.org

Southeast/ Southwest
Blake & Michelle Holton
Holton Enterprises
(407) 971-6286
Fax (407) 971-8598
adsalesbh@nfpa.org

Midwest
Tom Fitzpatrick
T.F. Marketing Associates
(630) 482-3394
Fax (630) 482-3396
tfitzpatrick@nfpa.org

West
Cynthia Louis
Louis Media
(970) 223-3911
Fax (970) 223-3991
adsalescl@nfpa.org

2002 AWARD WINNER
ASBPE
American Society of Business Publication Editors

2001, 2002 SNAP AWARD WINNER
SOCIETY OF NATIONAL SNAP ASSOCIATION PUBLICATIONS

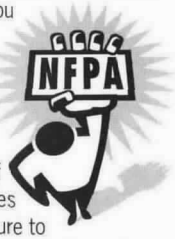
2001, 2002 AWARD WINNER
ozzie

ABOUT NFPA

NFPA has been a worldwide leader in providing fire, electrical, building, and life safety information to the public since 1896. The mission of the international nonprofit organization is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training, and education.

MEMBER BENEFITS

Membership in NFPA gives you access to the most current fire and life safety research, professional contacts and code updates you need in your job. *Benefits include:*



Code Newsletter: Enter your preferred e-mail address at www.nfpa.org for access to your online issue of *NFPA News* for the latest codes and standards activities. Be sure to also register for *NFPA Update*, a supplementary e-mail newsletter delivered monthly to your desktop.

Free Section Membership: Get additional benefits targeted to your profession. Joining one of NFPA's 16 specialty sections connects you to other industry experts worldwide. Trade tips and ideas, solve problems and build a network of peers you'll value throughout your career.

Subscription to *NFPA Journal*®: NFPA's official members-only bi-monthly magazine helps you stay on top of the latest news and trends in fire and life safety, prevention techniques, post-fire investigations, and code developments.

Advisory Service and Technical Help: Save time searching for answers to your compliance questions with free technical assistance from NFPA fire and life safety staff specialists.

Free Directory and Buyers' Guide: Keep these references at hand so you know who to call for what. The NFPA Directory lists staff contacts and areas of expertise, as well as guides to technical committees you may wish to serve on. The *NFPA Journal*® *Buyers' Guide* helps you locate products, manufacturers, consultants, and trade names quickly.

Online Privileges at www.nfpa.org: Enjoy members-only access to online features, special reports and code information, which is especially useful if you're preparing reports or presentations. Sign up for special e-mail bulletins on jobs posted in our Career Center or search for qualified employees for your organization.

Voting Rights: Have a voice in codes and standards you work with. Vote on proposed changes to codes and standards at the May and November meetings. Voting privileges begin after 180 days of individual membership.

Member Discounts: Get a 10 percent discount on all NFPA workshops, services, code books, field guides, continuing education seminars, handbooks, and manuals.

To join NFPA, or to update your membership information, call TOLL FREE 1-800-344-3555, or write NFPA, One Batterymarch Park, Quincy, MA 02169-7471.

If You Want "No Problem" Installation and Performance From the Sprinkler Components You Install, You Need AGF RiserPACK®

COMMERCIAL RISERPACK® TESTANDRAIN®

Commercial Models 8000/8011 **(1-1/4", 1-1/2", 2")**

AGF Manufacturing Inc. manufacturers high quality specialty products for Fire Sprinkler Systems.

- Fully assembled, easy to install compact unit saves time and money
- UL listed, domestically produced cast bronze body has 300 psi rating
- Every **RiserPACK®** and **TESTanDRAIN®** product is tested before it leaves AGF
- Prefabricated riser includes water flow switch, gauge, 3-way gauge valve and appropriate drain valve and complies with NFPA 13
- Optional relief valve can be installed or serviced without draining the system
- Available in NPT or grooved

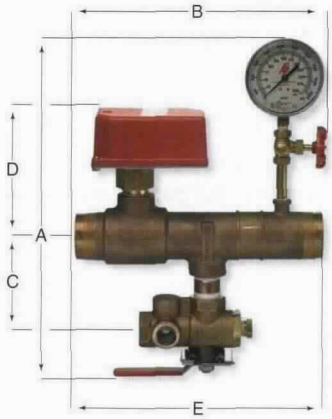
For complete specifications, call **(610) 240-4900**. Our experts are always on hand to assist you with your needs. Thank you for considering AGF.

Commercial Floor Control

- Built-in test port allow hydrostatic testing without draining the system
- Unique configuration eliminates need to drain system before installing relief valve
- Available with PRV to meet NFPA 13 requirements for gridded systems and any system requiring a pressure regulating valve
- 1-1/4 - 2" sizes available in cast bronze bodies with TESTanDRAIN® valve
- All sizes include mandated NFPA 13 Inspectors Test connection (3/8" to 14K ESFR) and flow switch, gauge and gauge valve
- Threaded connection to 2" and grooved connection in 1-1/2 and 2"

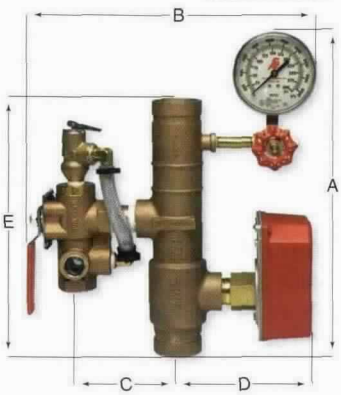
Model 8000

Model 8000	1-1/4"	1-1/2"	2"
A	14-1/2"	15-1/2"	15-1/2"
B	14"	14-1/4"	14-3/4"
C	4-3/4"	4-3/4"	5"
D	6-1/2"	6-3/4"	7"
E	11"	12"	12"



Model 8011

Model 8011	1-1/4"	1-1/2"	2"
A	11"	12"	12"
B	12-1/4"	2-1/2"	13"
C	4"	4-1/8"	4-3/8"
D	6-1/2"	6-5/8"	6-7/8"
E	11"	12"	12"



Not pictured, but also available:

Commercial "Shot Gun"

- Complete, prepackaged assembly of all equipment required for commercial applications
- Prefabricated riser includes water flow switch, gauge, 3-way gauge valve and appropriate drain valve.

MADE IN U.S.A.

AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355

T: (610) 240-4900 / F: (610) 240-4906
Email: info@testandrain.com
Web: www.testandrain.com

Reliability, Versatility, Code Compatibility

BY JOHN NICHOLSON

Looking back on 2004: Q&A with James Shannon

How would you characterize 2004 for our members?
I think 2004 was a very challenging and exciting year in many important areas. For example, we are much more actively involved in the area of homeland security. The passage of the National Intelligence Reform Act of 2004, which includes a reference to NFPA 1600, *Disaster/Emergency Management and Business Continuity Programs*, and the 9/11 Commission calling for businesses and others in the private sector to use NFPA 1600 were milestones for us.

We also put a lot of time, effort, and resources into supporting first responders. It's a sad fact that the threat of terrorism is going to be part of everyone's life from now on.

How can NFPA help the nation's private-sector businesses prepare for disaster?
NFPA 1600 gives businesses and other organizations a foundation document for the kind of planning they really should do to protect their employees and customers in the event of a terrorist attack. I'm afraid that a little bit of complacency is setting in as more time passes without a terrorist attack. We must make sure that does not happen, and NFPA 1600 will help us begin the process of thinking about the threat and actively preparing to deal with it.

When the Cook County Administration Building fire occurred last year in Chicago, killing six people, a majority of the people who worked there did not know the evacuation plan for the building, and almost half were unaware that the exit doors would lock behind them when they entered the stairwell. I would like to think that this lack of preparedness is unusual, but we know it isn't. If terrorists hit another big building, chances are we would find that the occupants have the same lack of vital life-saving information, and, if that happens, we Americans will ask ourselves why, with all the warning we had, we weren't ready. We at NFPA will increase our activities to encourage building owners and managers to ensure evacuation plans for all buildings.

Our most recent Fire Prevention Week survey showed that such a large number of Americans still underestimate the risk of fire. How can NFPA make people respect fire?

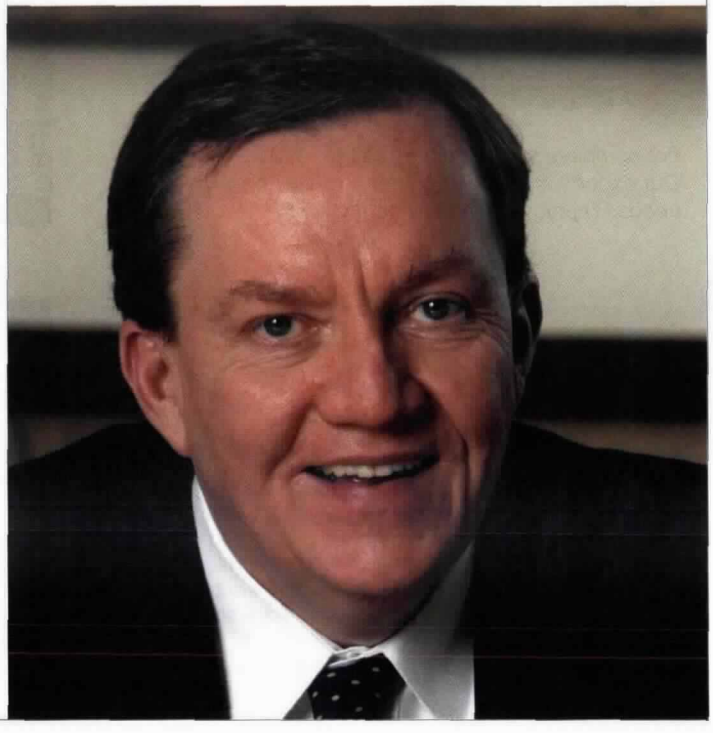
The fact that Americans underestimate the risk of fire does not surprise me. The number of fires has gone down and the number of home fire fatalities has been cut in half in the last 25 years. In an aggregate sense, it seems like less of a danger, but for many parts of the population, it is still a serious risk.

There are very basic things that people can do to improve their chances of escaping from a fire and saving their families' lives, things like installing smoke alarms and making sure they work. Despite a drastic rise in home smoke alarm use over the last 25 years, nearly one-quarter of the home smoke alarms in reported fires are not working. In fact, 70 percent of all home fire fatalities occur in homes where there are no smoke alarms or no working smoke alarms.

We will also continue to support and do more to advance the use of residential fire sprinklers. The cost has come down and more people are seeing the benefits of residential sprinklers.

Sprinklers can reduce heat, flames, and smoke, often containing or even extinguishing a fire before the fire department arrives at the scene. Smoke alarms and sprinkler systems together reduce fire death rates and property damage.

Cigarettes are still a leading source of home fires. What is NFPA doing to reduce this problem?
Lighted tobacco products led to one out of four fire deaths in the United States in 1999, more than any other cause of fire, and cigarettes are still the leading cause of fatal fires. That such a high percentage of



fires are caused by smoking and such a high number of the fire deaths originate with smoking is tragic.

We are aggressively supporting the legislation introduced by Congressmen Edward Markey and Peter King that requires cigarette manufacturers to make self-extinguishing cigarettes. Progress is being made. We have seen states take action, and I think we will see the federal government take action, too. And that will make a significant contribution in bringing down the number of fire deaths.

How did NFPA advocate on behalf of the nation's firefighters in 2004?

I testified in 2004 before Congress on behalf of NFPA, urging the federal government do more for this country's first responders. This is the first time in history that the federal government has asked, as an urgent national imperative, that our first responders be prepared to meet an international threat. It's not realistic to ask fire departments to do more to prepare, train, and equip themselves without giving them the resources. I've spoken to dozens of fire chiefs around the country who tell me that they are spending most of their time dealing with this new issue and new threat.

The needs assessment that NFPA did for the United States Fire Administration in 2002 demonstrates how important it is to put more resources into this area. The needs assessment examined the needs and response capabilities of the U.S. fire service. Among the factors examined are personnel and their capabilities; fire prevention and code enforcement; stations, apparatus and equipment; and the ability to handle unusually challenging incidents. Results are reported by nationwide and community size. Using this type of information, we will continue to work to ensure that our fire departments have the financial resources they need.

In addition, the U.S. Department of Homeland Security [DHS] adopted five NFPA standards for personal protective equipment for first responders that will help state and local procurement officials select the best protective equipment available. The standards, the first of their kind to be adopted by DHS, will protect first responders against chemical, biological, and other hazards at emergency incidents.

NFPA began work on many protective clothing and equipment standards for first responders long before the attacks on our nation. More must be done to provide adequate protection for our first responders, but the steps already taken will go a long way in ensuring that it will happen.

How is NFPA working with countries such as China to improve life safety?

The focus of our international efforts is in Latin America and China, and we are making great progress in both of those areas.

In China, we just signed a groundbreaking agreement with the National Technical Committee for Fire Protection Standardization, a committee of the Fire Department of the Chinese Ministry of Public Security, to translate 26 NFPA codes and standards into Chinese. We have developed a strong relationship with the Chinese fire service–they know NFPA and respect what we do. This agreement is a very important step in fulfilling our mission internationally.

We have also seen great advancement in our efforts in Latin America, where we see tremendous progress taking place. We have chapters in Colombia, Puerto Rico, the Dominican Republic, and Mexico, and last year, we established a chapter in Argentina. We are also working with the Argentinean standards organization (IRAM) and broadening our relationship with them. In general, we are seeing wider use of NFPA codes and standards in Latin America.

How significant is the National Electrical Code® [NEC®] to NFPA's overall mission?

I think the NEC is at the foundation of NFPA's mission to save lives and protect property. It is central to our mission and has such a large impact on what we do. Every time there's a new edition of the NEC, I am so proud of this organization because it is such a great example of what dedicated volunteers can do in protecting lives.

How will the changes to NFPA's meeting schedule affect members and the codes- and standards-development process?

We went to one meeting a year and changed our regulations in an effort to accommodate the needs of our members and to make their participation in NFPA's process as efficient and as easy as we can. Life has changed a lot in the last couple of decades, and people find their time stretched thinner and thinner. They just don't have the time to travel to meetings any more. Going to one meeting is an improvement for a lot of our members, who will not have to choose between the meetings anymore.

What are some of your goals for 2005?

We are going to do what we have always done, which is to read our mission broadly and to remember that, for more than 100 years, NFPA has led the way in saving lives and protecting property from fire and other hazards. In particular, we will spend a lot of time on homeland security. It must be an important part of what we do.

We will also continue to work aggressively to get NFPA 5000™, *Building Construction and Safety Code*™, adopted by additional states and local jurisdictions. And we will make NFPA as accessible as possible to our members so they can participate.

ANOTHER FACTOR?

The article about the fire in Paraguay listed several aspects that contributed to the high life loss. One aspect that appears to have not been specifically listed as a contributing factor was the exposed foam plastic beneath the roof deck. Exposed foam plastics have been highly regulated in the U.S. for a number of years. Building codes, including NFPA 5000™, *Building Construction and Safety Code*™, require foam plastics to "be separated from the interior of a building and from plenums by an approved thermal barrier." Although the article indicated that the burning characteristics of the foam plastic were not available, it would be interesting to learn the extent the exposed foam plastic contributed to fire propagation.

DOUGLAS H. EVANS, P.E.
Fire Protection Engineer
Clark County Building
Las Vegas, Nevada

ENCLOSURE SYSTEM

It was painful to learn of the tragic choices made by some of the store personnel described in the article "No Exit" by Eduardo Alvarez, SFPE and Jaime A. Moncada, P.E., SFPE, (*NFPA Journal* November/December 2004). I hope that there's a way that NFPA and other fire protection professionals can assist emerging countries improve the Life Safety requirements in their Building Codes to prevent another tragic incident such as this.

While the article references the potential controlling effect that a sprinkler system would have, I am puzzled as to why there is no reference to the effect a two hour fire-rated enclosure system around the duct would have had. An enclosure system around the duct shown on page 47, is designed to contain the fire within the duct and if utilized, may have provided enough time for the fuel source to be depleted and the fire to extinguish preventing further building damage or more importantly loss of life.

Field-applied, flexible blanket wrap products are well established in the U.S. and are utilized to provide a fire-rated enclosure around kitchen exhaust ducts. These wrap

style systems install quickly and are relatively inexpensive. Through independent laboratory testing, wrap systems have demonstrated they can contain a grease fire within the duct itself as well as prevent room fires from entering the ductwork and using it as a conduit to spread to other areas of the building outside the room of origin. Duct enclosure systems comply with nationally recognized fire test standards such as ASTM E1226, specifically for this application and achieve an hourly fire resistance rating along with a specified clearance distance to combustibles which typically is as low as zero.

CHRISTOPHER E. McPHILLIPS
Fire Protection Specialist
Unifrax Corporation

EXPLOSION IN A SILO OF WOOD PARTICLES

The July/August 2004 issue of the Journal gives (on pages 54-55) an account of how an explosion occurred in a silo containing sawdust and wood chips, and an explanation in terms of a dust explosion is given. I wonder whether the investigators also considered the possibility of a smoke explosion. We are told that the wood had been smoldering "for hours" and it is well known that smoldering is very productive of smoke. Smoke is rich in ignitable substances, partly CO but, more importantly in the case of smoldering combustion of wood, breakdown products of the cellulose broadly describable as "tars and oils." In the immediate neighborhood of the smoldering, there is too little air for these to ignite: in any case, they might be at a concentration above their upper flammability limit. The cavity described in the incident under discussion might have had the following effects leading to a smoke explosion:

- Dilution of the "tars and oils" to a concentration within the flammable range and accompanying enhancement of air supply
- Because of the improved air supply, a smoldering-to-flaming transition at the cavity surface providing an ignition source for the "tars and oils."

CONTINUED ON PAGE 79

IN A FLASH!

NFPA NEWS
COMPILED BY JOHN NICHOLSON

OUTREACH

Center for High-Risk Outreach trains Johannesburg fire service

UNDER THE SPONSORSHIP of the NFPA Center for High-Risk Outreach, Kwame Cooper, battalion chief of the Los Angeles City Fire Department and trainer/consultant for the center, and Ernest Grant, RN, MSN, a nursing education clinician at the North Carolina Jaycee Burn Center in Chapel Hill, traveled to Johannesburg, South Africa, from November 28 to December 4 to provide public education training for fire service personnel and public health officials.

The two facilitated a two-day workshop on developing a fire-safety curriculum for children and a standard message for fire and burn safety, and fire safety behavior. They also presented information on security bars on doors and windows, community-based fire stations, and injury- and burn-prevention strategies. Both events were co-sponsored by the Center for High-Risk Outreach and the World Burn Federation of Southern Africa.

Cooper and Grant also provided training on NFPA's *Learn Not to Burn®*, Remembering When™, and *Risk Watch®* programs, and supplied the Johannesburg fire service with NFPA educational videos, brochures, home fire escape grids, and school curriculum workbooks.

During the trip, the two men visited a burn center in Soweto, where they spoke with doctors and nurses about the extent of the burn problem and spent time with recovering burn patients. They also toured an informal settlement where hundreds of shacks had burned down when a kerosene stove in one shack was left unattended.

Since 2000, the Center for High-Risk Outreach, the mission of which is to reduce deaths and injuries from fires and burns among high-risk populations, has worked with Johannesburg Emergency Services, sending Ed Kirtley, an officer and instructor coordinator for the Department of Fire Service Training at Oklahoma State University and past chief of the Guymon, Oklahoma, Fire Department, to train fire service personnel to qualify on NFPA 1035, *Public Education Standard Qualifications*.

BUILDING CODE

Fire service, tenant groups, healthcare facilities, and others urge NYC to use NFPA code

DURING A NOVEMBER hearing before the New York City Council, hundreds of New York firefighters, fire officers, other public safety advocates urged the New York City Council to back Intro. 368, a bill that would adopt NFPA 5000™, *Building Construction and Safety Code*™, as the basis for New York's city-wide building code.

During the hearing, Peter Gorman, president of the Uniformed Fire Officers Association (UFOA), Local 854, said the NFPA code will "provide the right level of safety and protection for New York City fire officers and firefighters as well as the public we serve."

Stephen Cassidy, president of the Uniformed Firefighters Association (UFA), Local 94, agreed, pointing out that technical experts had evaluated NFPA's code and the other code under consideration in New York City.

"I am convinced the NFPA's building code is the best basis for New York City's building code," said Cassidy.

In addition to representatives of the fire service, council members heard support for NFPA 5000 from representatives of healthcare facilities, the architectural community, people with disabilities, and others involved in the field of construction and building safety.

Council Member Robert Jackson, sponsor of Intro. 368, said, "Today's hearing shows how broad the support for NFPA's code in New York City is. It is clearly the right code for New York City." Intro. 368 is already co-sponsored by more than 30 council members.

The Committee on Housing and Buildings will probably hold additional hearings on the building code issue.

ILLUSTRATION: VEER

INTERNATIONAL

Pact will enhance safety at the 2008 Olympic sites in Beijing

IN A GROUNDBREAKING agreement between NFPA and the National Technical Committee for Fire Protection Standardization, a committee of the Fire Department of the Chinese Ministry of Public Security, 26 NFPA codes and standards will be translated into Chinese in the coming months.

NFPA President James M. Shannon and Major General Guo of the Chinese Ministry of Public Security signed the licensing agreement in Beijing last fall. The Fire Department will translate the codes, and NFPA will follow up with significant training.

The translation and use of these NFPA codes and standards will guide Chinese authorities as they ready sites for the 2008 Olympic Games in Beijing.

"We are pleased to work with the Ministry of Public Security and General Guo in translating NFPA's key codes," said Shannon. "The availability of our codes and standards in China will enhance fire and life safety for residents and visitors, and we are confident that these enhancements to safety in China will have a lasting impact beyond the Olympics."

The codes to be translated are:

- NFPA 1, *Uniform Fire Code*™, 2003 edition
- NFPA 13, *Installation of Sprinkler Systems*, 2002 edition
- NFPA 13D, *Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, 2002 edition
- NFPA 13E, *Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*, 2000 edition
- NFPA 13R, *Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height*, 2002 edition
- NFPA 30, *Flammable and Combustible Liquids Code*, 2003 edition
- NFPA 54, *National Fuel Gas Code*, 2002 edition]
- NFPA 70, *National Electrical Code*®, 2002 edition
- NFPA 72®, *National Fire Alarm Code*®, 2002 edition
- NFPA 101®, *Life Safety Code*®, 2000 edition
- NFPA 101A, *Alternative Approaches to Life Safety*, 2004 edition
- NFPA 101B, *Means of Egress for Buildings and Structures*, 2002 edition
- NFPA 130, *Fixed Guideway Transit and Passenger Rail Systems*, 2003 edition
- NFPA 230, *Fire Protection of Storage*, 2003 edition
- NFPA 520, *Subterranean Spaces*, 1999 edition
- NFPA 750, *Water Mist Fire Protection Systems*, 2003 edition
- NFPA 909, *Protection of Cultural Resources*, 2001 edition
- NFPA 914, *Fire Protection of Historic Structures*, 2001 edition
- NFPA 921, *Fire and Explosion Investigations*, 2004 edition
- NFPA 1031, *Professional Qualifications for Fire Inspector and Plan Examiner*, 2003 edition
- NFPA 1141, *Fire Protection in Planned Building Groups*, 2003 edition
- NFPA 1500, *Fire Department Occupational Safety and Health Program, 2002 edition*
- NFPA 1901, *Automotive Fire Apparatus*, 2003 edition
- NFPA 1971, *Protective Ensemble for Structural Fire Fighting*, 2000 edition
- NFPA 1983, *Fire Service Life Safety Rope and System Components*, 2001 edition
- NFPA 1600, *Disaster/Emergency Management and Business Continuity Programs*, 2004 edition

Other NFPA codes and standards may be translated into Chinese in the near future.

In Beijing, Shannon also served as the keynote speaker for the China Fire 2004 Conference.

NFPA REPORT

NFPA urges caution with heating choices for the home

ACCORDING TO A new NFPA report, death tolls and direct property damage in home heating fires started by portable and fixed space heaters and related equipment in 2001 were the lowest they have been in the 22 years studied (1980 through 2001).

Nonetheless, two out of three reported home-heating fires and associated deaths and injuries in 2001 involved portable and fixed space heaters and related equipment. The estimated 54,900 home-heating equipment fires killed 220 people, injured 1,120 civilians, and did $502 million in direct property damage.

The five most widely used types of portable or fixed space heaters are room gas heaters, portable kerosene heaters, portable electric heaters, wood stoves or fireplaces with inserts, and built-in or other fixed electric heaters. The first three present the highest risk of death, including non-fire deaths due to carbon monoxide, and injury. Portable kerosene heaters are the deadliest by most measures and are illegal in some states. Solid-fueled space heaters, such as wood stoves, usually present the highest risk of property damage.

The causes of home-heating fires include a lack of regular cleaning that leads to creosote buildup in wood-burning devices, chimneys, and connectors; installing or placing space heaters too close to combustibles or placing combustibles too close to them; construction, design, and installation flaws in wood-burning devices; and fueling errors involving liquid- or gas-fueled heating equipment.

For more detailed information and on the report, members can visit www.nfpa.org to download a copy of this new fire analysis report and view other statistic reports.

HOMELAND SECURITY

Are U.S. fire departments prepared for terrorism?

A December 2004 report by the nonprofit Trust of America's Health finds state public health bioterrorism preparedness still lacking three years after September 11.

In July 2004, NFPA issued a report that included an analysis of state-by-state fire department readiness for incidents including building collapse and chemical and biological events. Among NFPA's findings on U.S. fire departments:

Only 13 percent report they can handle the hazmat and emergency medical response tasks associated with a chemical or biological agent incident involving 10 injuries using only local personnel.

Only 11 percent report they can handle the hazmat and EMS tasks associated with chemical or biological incidents involving 10 injuries using only local equipment.

Only 21 percent have a written plan for coordinating local and non-local resources to deal with such incidents.

Early last year, the U.S. Department of Homeland Security (DHS) adopted five NFPA standards for personal protective equipment for first responders. These adoptions will assist state and local procurement officials in selecting the best available protective equipment.

The standards, the first of their kind to be adopted by DHS, will protect first responders against chemical, biological and other hazards at emergency incidents.

The five standards are:

- NFPA 1951, *Protective Ensemble for USAR Operations;*
- NFPA 1981, *Open-Circuit Self-Contained Breathing Apparatus for Fire and Emergency Services;*
- NFPA 1991, *Vapor-Protective Ensembles for Hazardous Materials Emergencies;*
- NFPA 1994, *Protective Ensembles for Chemical/Biological Terrorism Incidents;*
- NFPA 1999, *Protective Clothing for Emergency Medical Operations.*

In addition, DHS adopted three other standards, from the National Institute of Occupational Safety and Health, (NIOSH), for respirators to protect against chemical/biological/ radiological/nuclear environments. The standards adopted will also provide manufacturers with requirements for the design, performance, testing, and certification of equipment.

All NFPA safety codes and standards are developed through a process accredited by the American National Standards Institute (ANSI). The 200 technical committees responsible for developing and updating all 300 codes and standards include 6,000 volunteers. For more information on these standards and the needs assessment, visit www.nfpa.org.

NFPA REPORT

NFPA Report: Maintain home smoke alarms, replace older ones

SEVENTY PERCENT OF all home fire fatalities occur in homes where there are no smoke alarms or no working alarms, a new report from NFPA reveals. Despite a dramatic rise in home smoke alarm use over the last 25 years, nearly one-quarter of the home smoke alarms in reported fires do not work.

When a home smoke alarm doesn't work, it's genereally because its batteries are missing, dead, or disconnected. In half the reported fires where there were no working smoke alarms, batteries were missing or disconnected, and batteries were dead in 15 percent of these incidents. People too often disconnect or remove batteries because they are tired of dealing with nuisance activations from cooking or bathroom steam. In many cases, simply moving the smoke alarm farther from the kitchen or bathroom can reduce these unwanted activations.

NFPA urges consumers to make sure their smoke alarms are working and to test them in accordance with manufacturer's instructions at least once a month. If your smoke alarms are more than 10 years old, you should replace them. NFPA found that 19 of every 20 U.S. homes had at least one smoke alarm. However, 4 of every 10 home fires that were reported to fire departments in the United States occurred in the small percentage of homes that lacked these devices.

Currently, most homes in the United States have battery-powered smoke alarms that are not interconnected. Hard-wired smoke alarms with battery back-up are usually a better bet because their power source is more reliable, and when alarms are interconnected, they can alert everyone in the home if fire strikes. The battery in both types of smoke alarms should be replaced in accordance with manufacturer's instructions, typically at least once a year. Another good option is the 10-year extended-life, lithium-battery-operated device.

PHOTOGRAPH: CORBIS

The Fall Technical Committee Report session

THE TECHNICAL COMMITTEE Report session at the Fall Education Conference in Miami was held on November 17. The following are the results for the NFPA documents reporting at this session:

Accepted
NFPA 12, *Carbon Dioxide Extinguishing Systems*
NFPA 720, *Installation of Household Carbon Monoxide (CO) Warning Equipment*
NFPA 909, *Protection of Cultural Resources*
NFPA 850, *Fire Protection for Electric Generating Plants and High-Voltage Direct Current Converter Stations*
NFPA 851, *Fire Protection for Hydroelectric Generating Plants*
NFPA 110, *Emergency and Standby Power Systems*
NFPA 111, *Stored Electrical Energy Emergency and Standby Power Systems*
NFPA 1936, *Powered Rescue Tool Systems*
NFPA 1561, *Emergency Services Incident Management System*
NFPA 1581, *Fire Department Infection Control Program*
NFPA 13E, *Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems*
NFPA 1410, *Training for Initial Emergency Scene Operations*
NFPA 1452, *Fire Service Personnel to Conduct Dwelling Fire Safety Surveys*
NFPA 11, *Low-, Medium-, and High-Expansion Foam Systems*
NFPA 11A, *Standard for Medium- and High-Expansion Foam Systems*
NFPA 99B, *Hypobaric Facilities*
NFPA 50, *Bulk Oxygen Systems at Consumer Sites*
NFPA 50A, *Gaseous Hydrogen Systems at Consumer Sites*
NFPA 50B, *Liquefied Hydrogen Systems at Consumer Sites*
NFPA 55, *Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks*
NFPA 600, *Industrial Fire Brigades*
NFPA 601, *Security Services in Fire Loss Prevention*
NFPA 35, *Manufacture of Organic Coatings*
NFPA 501A, *Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities*
NFPA 1003, *Airport Fire Fighter Professional Qualifications*
NFPA 1035, *Professional Qualifications for Public Fire and Life Safety Educator*
NFPA 1194, *Recreational Vehicle Parks and Campgrounds*
NFPA 92B, *Smoke Management Systems in Malls, Atria, and Large Areas*
NFPA 520, *Subterranean Spaces*
NFPA 326, *Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair*

Accepted
NFPA 329, *Handling Releases of Flammable and Combustible Liquids and Gases*
NFPA 214, *Water-Cooling Towers*

Accept as Amended
NFPA 1192, *Recreational Vehicles*
Accept Comment 1192-38
Accept Identifiable Part of Comment 1192-25

NFPA 225, *Model Manufactured Home Installation Standard*
Accept Comment 225-15, 225-16, 225-14, 225-32
Accept Comment as Modified by TCC 225-8

NFPA 501, *Manufactured Housing*
Accept Comment 501-6, 501-7, 501-11
Accept Comment as Modified by TCC 501-3

NFPA 99, *Health Care Facilities*
Return Comment & Proposal P99-307, C99-126

Hazardous Materials Protective Clothing and Equipment
NFPA 1991, *Vapor-Protective Ensembles for Hazardous Materials Emergencies*
Reject Comment 1991-16

NFPA 1992, *Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies*
Reject Comment 1992-7

NFPA 1977, *Protective Clothing and Equipment for Wildland Fire Fighting*
Reject Comment 1977-7

NFPA 76, *Fire Protection of Telecommunications Facilities*
Accept Comment 76-35, 76-157
Return Identifiable Part of Comment 76-10

Key NFPA codes used to protect Prince Edward Island residents

BY AN EXECUTIVE Council Order, the Province of Prince Edward Island in Canada formally adopted the 2003 editions of NFPA 101®, Life Safety Code®, and NFPA 1, Uniform Fire Code™ (UFC), effective November 2, 2004.

The Life Safety Code mandates building design construction, operation, and maintenance requirements to protect occupants of new and existing e, and toxic fumes. NFPA 1, UFC, integrates two of the world's most widely adopted fire codes, NFPA 1, Fire Prevention Code, and the Uniform Fire Code. The latest edition of NFPA 1 provides requirements necessary to establish a reasonable level of fire saf

Inside the Research Foundation

TO BETTER SUPPORT the needs of NFPA's technical committees and the fire safety community, the Fire Protection Research Foundation is developing a new business and operations model for its activities in 2005. Elements of the model include links and research support to the NFPA committee structure; revamped research advisory councils and research planning mechanisms, including removal of fees; and changes in the project management structure to a fee-for-service approach. This model is currently being reviewed by the foundation's Board of Trustees.

Call for applications for the 2005 Rolf H. Jensen Award

NFPA IS SEEKING applications for the 2005 Rolf H. Jensen Memorial Public Education Award. Funded by Rolf H. Jensen and Associates, the award provides a grant annually to a fire department implementing a fire and life safety education program or campaign. The award is open to any career or volunteer fire department in the United States.

For more information visit www.nfpa.org/Education/Scholarships/Awards/Jensen/Jensen.asp. Applications must be submitted to NFPA by February 11, 2005.

BY KENNETH J. TREMBLAY

Firefighters and state inspectors search through the remains of a fire hall destroyed by an explosion.

PHOTOGRAPH: AP/WIDE WORLD PHOTOS

COMMUNITY

Explosion destroys fire station

MINNESOTA—A community fire station with two separate buildings adjacent to each other lost one building to an explosion and fire that also damaged the other and destroyed seven vehicles, firefighters' personal protective equipment, self-contained breathing apparatus, and all but 600 feet (183 meters) of fire hose.

Both one-story, wood-frame buildings had metal roofs, and neither had fire detection or suppression systems. The station in which the explosion occurred measured 40 feet (12 meters) by 60 feet (18 meters), and the other measured 50 feet (15 meters) by 76 feet (23 meters). Both buildings were unoccupied at the time of the incident.

The cause of the 11:15 p.m. explosion is under investigation. Damages are expected to run into the millions.

EDUCATIONAL

Fire damages school

NORTH CAROLINA—A firewall separating two areas of a combined elementary and middle school prevented fire from destroying one section of the building. However, the fire, which started during the evening, burned undetected for approximately an hour before a passerby noticed it and resulted in a multi-million dollar loss.

The two-story, wood-frame structure had been built in two stages, the first in 1928 and the second in 1936. Its exterior walls were made of brick, and the flat wood-deck roof was covered with tar and gravel. The building, which was 500 feet (152 meters) long and 50 feet (15 meters) wide, had a fire detection system, but it only provided a local alarm. There were no sprinklers.

Fire investigators determined that the fire began on the stage in the first-floor auditorium of the 1928 section of the school when an electric arc in the lighting system ignited the stage curtains. The blaze then spread through concealed ceiling spaces to the second floor.

A passerby called 911 at about 2:15 a.m., by which time the fire was well advanced. Fortunately, the firewall kept the blaze from spreading into the 1936 addition.

The school, valued at $5 million, and its contents, estimated at $750,000, sustained damages estimated at $3.5 million and $300,000, respectively. One firefighter received an eye injury during the blaze.

Flash fire injures teacher and students

WASHINGTON—A flash fire that erupted during a science experiment injured a teacher and four students and damaged some of the room's contents. However, it did not last long enough to fuse the room's sprinklers.

The multi-level high school consisted of a variety of construction types, but the area in which the fire occurred was of masonry construction. The school had a fire detection system with smoke and heat detectors and manual pull stations. A wet-pipe sprinkler system provided full coverage.

The experiment involved several beakers containing a solution of water, methanol, and metallic salts to produce flames of different colors. The teacher had performed the demonstration several times earlier during the day without incident. When trying to ignite the vapors with a match this time, however, she didn't detect a flame. She was pouring additional methanol into the beaker from a 3-quart (4-liter) plastic jug when the vapors flashed, igniting her hair and clothing.

A student used his jacket to smother the flames, and the remaining fire was extinguished with a portable fire extinguisher. The fire did not produce enough heat to activate the sprinklers or enough smoke to activate the fire alarm system immediately.

Investigators believe that the vapors had, in fact, ignited the first time the teacher lit them and burned with an invisible flame. Once she added more fuel, the additional vapor flashed, and the fire spread to the combustibles on the teacher's desk.

Fire damage was limited to the classroom. The school, valued at more than $15 million, sustained less than

That's why you need a Faraday Intelligent Fire Detection System.

New Faraday intelligent systems offer the world's fastest detection speed and the same advanced technology that protects many of the world's most sophisticated structures. But, they can be sized to fit the specific safety needs and budget of most fire safety applications. In an average of 3 seconds, they detect fire, initiate alarms and engage emergency control operations. They work with proven devices like our Digital Voice Evacuation Systems, and FireSmart® Intelligent Detectors that can be set for 11 different environments. Plus, installation is up to 25%* faster than typical systems.

Faraday Intelligent Fire Detection Systems. Because fire safety is a top priority no matter what size the building. For details, visit faradayfirealarms.com.

* Depending on size and type of building.

FARADAY

Analog/addressable and conventional fire control panels • Life-safety rated audio and visual alarms

Circle 008 on Reader Service Card

$200 in losses. The teacher and three students were treated for thermal burns, and another student with a heart complaint was also transported from the scene.

RESIDENTIAL

Heater ignites combustibles

Ohio—Two children died of smoke inhalation and one adult was injured when an electric heater placed too close to a mattress in a second-floor bedroom of their single-family house ignited bedding material.

The fire occurred in a one-and-a-half story, wood-frame house that was 40 feet (12 meters) long and 30 feet (9 meters) wide and covered by a brick veneer. A private alarm company monitored smoke detection equipment on the first floor, but not the battery-powered smoke alarms on the second. A smoke alarm in a second-floor bedroom had no battery.

The fire spread through the attic vent and eventually burned through the roof. However, the smoke did not reach the first-floor detector, so the fire may have burned for several hours before one of the home's occupants detected it and called 911 at 5:30 a.m.

Two boys, ages one and two, died as a result of the fire.

The house, valued at $100,000, and its contents, valued at $40,000, sustained $40,000 and $20,000 in damage, respectively.

Two children die in house fire

INDIANA—A fire that investigators believe was started by an electrical short in an appliance wire quickly spread into an enclosed porch, where it killed two young children.

The wood-frame house was 40 feet (12 meters) long and 35 feet (10 meters) high and had an asphalt-covered roof. It had no smoke alarms or sprinklers.

The occupant called the fire department from a neighbor's home at about 8:10 a.m. Evidently, the refrigerator's electrical cord short circuited and ignited the fire, which spread through a window to the porch and up the stairs.

Two children, a four-year-old girl and a two-year-old boy, suffered fatal heat and smoke inhalation injuries. The house, valued at $45,000, and its contents, valued at $5,000, sustained estimated losses of $30,000 and $5,000, respectively.

Lack of smoke alarms contributes to deaths

NORTH CAROLINA—Three people died when smoke and heat filled an unsprinklered single-family home whose two smoke alarms were not working. One alarm had no battery, and the other's battery had been disconnected, rendering it useless.

The one-story, wood-frame house, which was approximately 49 feet (15 meters) wide and 33 feet (10 meters) long, had a brick veneer and an asphalt-shingled roof. There were three bedrooms, a kitchen, a living room, a den, and a storage area.

One member of the household managed to escape and woke a neighbor, who called 911 at 2:43 a.m. A 38-year-old woman and her two children, a 13-year-old boy and a 12-year-old girl, were trapped inside when firefighters arrived less than five minutes later.

Forcing the lock on the front door, firefighters advanced a 1-3/4-inch hose line into the living room to cool down the fire and used a thermal imaging camera to search for the victims. The front bedroom where they had been told the trapped occupants were last seen was found clear, so they continued to the back of the house, eventually finding all three victims in a rear bedroom.

Investigators determined that the fire started in the wall where the flue of a wood-burning stove chimney entered it. Creosote escaping from the chimney through a crack in the lining had accumulated in the wall void, where the heat of the operating stove eventually ignited it. From there, flames spread to the walls and ceiling.

Because the house had no operating smoke alarms, fire department notification was delayed until the fire was well involved.

The woman and her two children died in the blaze. Damage to the house, valued at $55,000, was estimated at $10,000, and damage to its contents, valued at $7,000, was estimated at $5,000.

Sprinklers control hotel fire

WASHINGTON—Four sprinklers controlled an unintentional fire in a large hotel ballroom, limiting damage to the building and alerting the fire department.

The wood-frame hotel, which measured 200 feet (61 meters) by 100 feet (30 meters), had a flat, built-up roof

supported by wooden trusses and covered with asphalt and tar. The unoccupied ballroom was protected by a wet-pipe sprinkler system, as was the attic above it.

A 911 call from a passerby at 9:56 p.m. alerted firefighters to a column of smoke coming from the hotel ballroom. The call was followed shortly afterwards by a call from the monitoring company, reporting a water flow alarm. Responding fire crews noted light-colored smoke coming from a corner of the ballroom roof when they arrived on the scene, and the incident commander sent a ladder and engine crew to the roof to locate the source. As firefighters began opening up the roof near an HVAC unit, interior crews pulled down ceilings located the seat of the fire.

Sprinklers in the concealed space were keeping the fire under control, but attic insulation blocked some of the water spray, allowing the blaze to continue burning. Eventually, the entire space was opened from the ceiling to the roof, and the fire was extinguished.

Investigators determined that the rooftop heating equipment was involved in the ignition of the hotel's framing materials, but they couldn't determine the exact ignition sequence.

Damage to the building, valued at approximately $15 million, was estimated at $100,000. Damage to its contents was estimated at $60,000. There were no injuries.

Malfunctioning heater ignites wood framing

MARYLAND—Flames spreading through concealed spaces in this mercantile and residential occupancy made it difficult for firefighters to extinguish the blaze.

The three-story building, which measured 170 feet (52 meters) by 75 feet (23 meters), was of balloon-type construction with heavy timber framing, brick walls, and open chases from the basement to the roof. On the first floor were a clothing store, a restaurant, and a bar, all of which were closed at the time of the fire. On the second and third floors were nine occupied apartments. There were single-station, battery-operated smoke alarms in the apartments and hallways, but many of the batteries had been disconnected or removed. A partial wet-pipe sprinkler system provided coverage on all floors but the basement. However, a frozen intake valve in the basement compromised the system.

An occupant called 911 to report an apartment fire at 6:20 a.m., and responding firefighters and police officers noted light smoke showing from

the building when they arrived on the scene. Firefighters advanced a 2-inch hose line to the second floor, where they encountered light smoke and several residents, who were evacuating the building. Another crew discovered the fire in the basement furnace room, although most of the heat from the room had vented up through the wall and broken into the apartments.

The interior crews worked for nearly an hour before the incident commander, fearing collapse, ordered all firefighters from the building. Using ladder pipes and ground monitors, crews played hose streams into the building from safe positions outside until they brought the fire under control. Eventually, the roof and third floor collapsed into the second floor and parts of the first floor.

Investigators determined that a malfunctioning coal-fired furnace ignited first-floor framing and that the fire spread up through the void between a wall and the chimney until it reached the roof. Interior crews reported hearing only one or two smoke alarms when they entered the building and noted that the sprinkler system not working. A firewall prevented the fire from spreading to adjacent buildings.

Damage to the building and its contents losses were estimated at $1 million. Three firefighters suffered minor injuries.

MERCANTILE

Fire in concealed space damages building

PENNSYLVANIA—A fire burning undetected in concealed spaces for several hours heavily damaged an historical building that housed an umbrella store that was closed for the evening.

The three-story, wood-frame building, which was 98 feet (30 meters) long and 19 feet (6 meters) wide, had brick walls and an asphalt roof. There were no sprinklers or detection systems.

When people in a neighboring business detected smoke, they went to the store to investigate and called the fire department at 10:45 p.m.

By the time firefighters arrived, the blaze had spread to stock piled to ceiling height and up non-enclosed stairwells from the first floor to upper floors, burning in concealed floor voids. The center part of the building collapsed, and firefighters protected several exposures, including businesses, an apartment house, and other historical buildings.

The fire began in wiring in the first-floor ceiling near the middle of the building. The building, valued at $300,000, and its contents, valued at $150,000, were destroyed. No one was injured during the incident.

Welders start fire

MAINE—A fire started by hot slag dropping on combustibles spread through an occupied supermarket, causing millions of dollars in property damage.

The 54,000-square-foot (5,017-square-meter), steel-frame building had masonry walls and a concrete panel roof with built-up roof covering. It was protected by three wet-pipe sprinkler systems and one dry-pipe system, and smoke and heat detectors, monitored by the fire department, were located throughout the store. However, all the detection and suppression systems were shut off at the time of the fire.

A contractor was welding in a second-floor electrical room when hot slag drop down between electrical conduits to first-floor storage containing pallets of plastic trays on which meat was packaged. When the contractor saw smoke coming from the room, he went to investigate and, discovering the contents of the room on fire, tried to extinguish it. A 911 call to the fire department at 9:55 a.m. alerted firefighters, who put out the fire.

Damage to the property, valued at $3.5 million, was estimated at $500,000. The store's contents, valued at $2 million, were a total loss. Two firefighters suffered burns during the incident.

Furniture store fire

KENTUCKY—A large warehouse that had been subdivided into several retail and storage occupancies suffered significant damage when a fire started in a shop specializing in wood furniture.

The unoccupied steel-frame building, which was 500 feet (152 meters) long and 250 feet (76 meters) wide, had concrete block walls 20 feet (6 meters) high and a wooden-deck roof supported by steel trusses and covered with a built-up flat roof that had been completely covered in metal sheathing during a renovation. There were no sprinklers or fire detection equipment.

A police officer saw the fire, which had been burning for some time, and radioed the fire department. Responding firefighters arrived within minutes to find smoke and flames coming from one wall that had partially collapsed. They used hose lines, deck guns, and ladder pipes to mount a defensive attack.

Investigators determined that the fire started in an occupancy that manufactured and sold wooden furniture. Workers had been staining a display in the building earlier in the day, using shop rags, paintbrushes, and rollers. They cleaned up with mineral spirits and disposed of the debris in plastic trash bags they left near the display. The workers used four portable kerosene heaters that day and shut them off before they left the warehouse. Investigators identified several potential ignition points but could not narrow down the cause of the fire

Damage to the building and its contents were estimated at $4 million. There were no injuries.

BASIC INDUSTRY

Fire ruins farm building

MASSACHUSETTS—A fire destroyed a barn at a poultry farm, causing a $1 million loss. Workers had left for the day about 90 minutes before the fire was detected.

The two-and-a-half-story, wood-frame building was 300 feet (91 meters) long and 40 feet (12 meters) wide. It had wood-truss floors and a wood-truss roof covered with metal sheathing. There were no sprinklers or fire detection equipment.

Firefighters responding to a 5:38 p.m. 911 call discovered the building fully involved in fire when they arrived three minutes later. Four alarms were sounded, bringing apparatus from several communities to help extinguish the blaze.

Investigators determined that workers using a propane torch on the second floor of the building to kill insects apparently ignited the structural framing. They did not notice any fire or smoke and left for the day later, unaware that a fire was in progress.

On arrival, the incident commander reported that the building was fully involved and ordered a second alarm, requesting water tenders and an extra engine and ladder. He struck a third alarm within minutes.

The building, valued at $650,000, and its contents, valued at $350,000, were a total loss. No one was injured.

STORAGE

Fire spreads to building

OHIO—Reclaimed resin products in a processing pit outside a warehouse ignited and quickly spread to the building, which was loaded with combustibles.

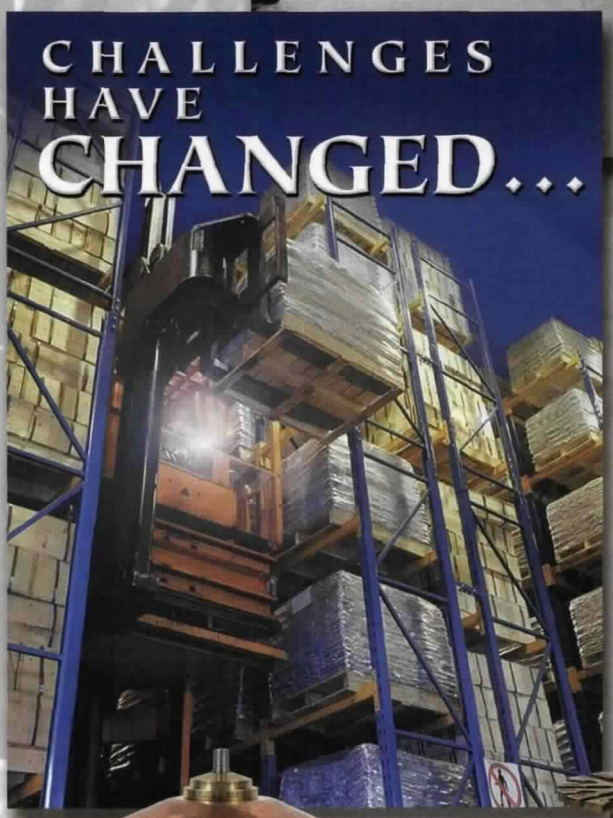
The single-story, wood-frame warehouse was 300 feet (91 meters) long and 100 feet (30 meters) wide. It had metal siding and a metal roof, and was protected by a smoke detection system. There were no sprinklers.

A warehouse employee discovered the fire and called 911 at 10:15 a.m. as the building was evacuated. The fire department arrived three minutes later. The blaze quickly spread from the processing pit to the warehouse roof, where a strong wind fanned the flames along the entire length of the building within 10 minutes of the firefighters' arrival. Once inside the building, the fire ignited paper and plastic products.

Responding firefighters saw heavy, black smoke coming from the scene and placed their deck gun in service. The incident commander ordered a defensive attack and requested several aerial ladders from other fire departments. Firefighters brought the fire under control in about two hours.

Investigators believe that a spontaneous chemical reaction started the fire in the resin-processing pit. Once ignited, the blaze jumped to the nearby warehouse and engulfed it.

The warehouse, valued at $500,000, and its contents, valued at $200,000, were a total loss. There were no injuries.



SO HAVE WE.

Tyco Fire Products has risen to meet the challenges of an ever-changing storage industry with the development of the most comprehensive range of storage sprinklers on the market.

Innovative sprinklers such as the EC-25, ESFR-25 and ESFR-17 are just a few examples of our commitment to meet the dynamic challenges of the 21st century.

Regardless of the size of the storage space or the materials it houses, Tyco Fire Products is reaching to new heights to meet any warehousing challenge with sprinkler solutions that work.

CENTRAL Gem STAR

tyco
Fire Products

Tyco Fire Products
800-523-6512
Fax 215-362-5385
www.Tyco-Fire.com

Circle 025 on Reader Service Card

When sprinklers aren't there

A HIGHLIGHT OF the NFPA Fall Education Conference in Miami was a presentation on the January 2004 Comfort Inn fire in Greenville, South Carolina, which killed 6 people and injured 12. Presenters included NFPA Fire Investigator Robert Duval, who assisted in the investigation of the fire.

The fire was of suspicious origin and began among furnishings in a third-floor lounge. All the fatalities were found on the floor of origin. According to news reports, smoke overcame the victims so quickly that at least two appeared to have fallen as they walked or ran down the hall, and some were so disoriented they were moving toward the most intense area of the fire.

With sprinklers so widely appreciated and available, the question becomes, "Why aren't fire sprinklers installed universally?"

Unlike many of the 55,000 hotels and motels in the United States, the Greenville Comfort Inn was not fully sprinklered. In fact, the only fire sprinklers in the noncombustible building were located in the laundry chute.

According to news reports, the Comfort Inn had standpipes and wall-mounted hoses in the hallways and stairwells, but none had been activated and no fire extinguishers were used before emergency crews arrived. The approximately 20-year-old building passed its last inspection and was not required to have sprinklers.

Obvious question

A lack of fire sprinklers is often a key issue in the litigation to which fire losses of this type generally lead. With sprinklers so widely appreciated and available, the question becomes, "Why aren't fire sprinklers installed universally?"

Liability avoidance is no doubt a key reason major hotel chains decided to incorporate sprinklers in their new and existing facilities, even where they were not mandated by law. And liability for the absence of fire sprinklers isn't an issue confined to hotel and motel properties.

One wrongful death lawsuit resulted from an incendiary fire in Rosa's Home Center in Tonawanda, New York, on April 3, 2001. The fire was first noted in furniture displays and grew quickly among the wood and plastics of the furniture and bedding. Smoke conditions in the facility were initially reported to be tolerable, but when two employees left through a double door to the warehouse, conditions changed dramatically. Smoke and fire reportedly burst from the plenum above the ceiling, resulting in the death of a sales person.

Building code violations

The investigation focused on various building code violations, including the lack of a fire sprinkler system, and on the spread of fire gases through the building. Ultimately, the suit filed on behalf of the employee who died was settled in favor of the plaintiff's estate.

What makes this case unusual is that the plaintiff's attorney, a former prosecutor, decided to tell the story. He was so impressed by the difference sprinklers would have made that he developed a documentary explaining the fire and its investigation, with clips of local fire authorities, investigators, and experts retained in the civil claim describing their findings. He uses photographic evidence to piece together the fire dynamics and explains how proofs of code violations are accepted as evidence of negligence under New York State law.

The DVD of the case study, available for purchase at IHWP@tomburton.com, is unique as a documentary of both a fire investigation and a lawsuit. It reminds us that fire sprinklers often feature prominently not just for where they are, but also for where they weren't.

RUSS FLEMING is the executive vice-president of the National Fire Sprinkler Association in Patterson, New York, and a member of the NFPA Board of Directors.

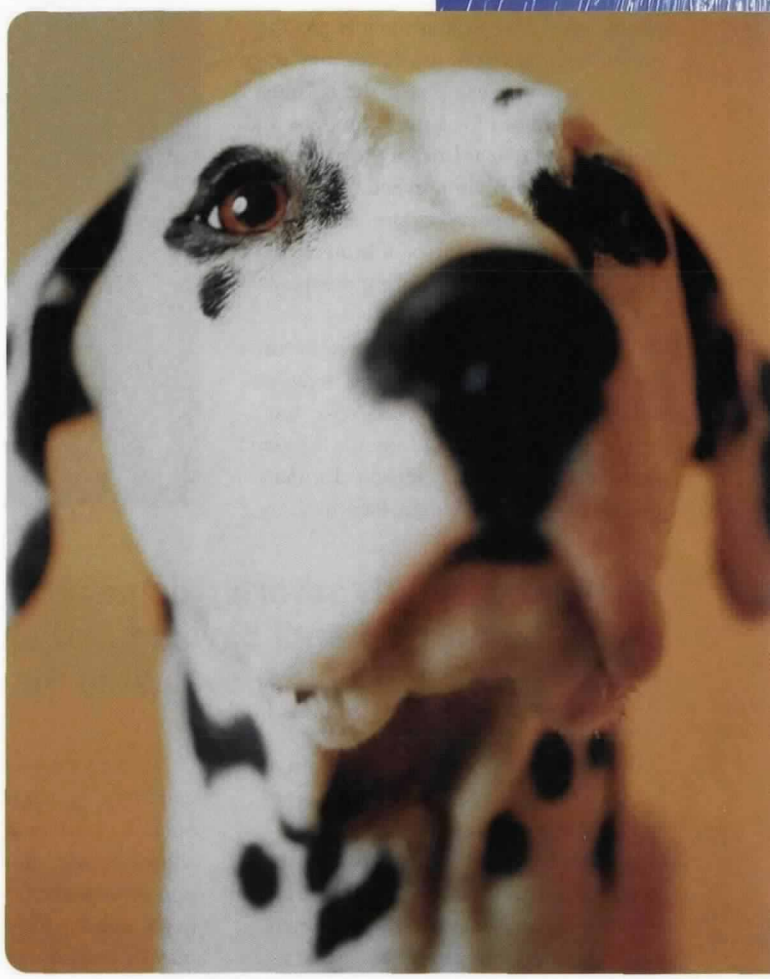
ILLUSTRATION: JACK DESROCHER

The smarts to keep your profitability flowing.

As your fire protection solutions partner, we understand reliability and performance are goal No. 1. But Victaulic fire protection solutions don't end there.

Built into every Victaulic system is 80 years of innovation and ingenuity. Ingenuity that delivers greater design flexibility and faster system installation to help you complete your projects ahead of schedule.

As a result, you work smarter and more productively while delivering the reliability your customers demand. Working smarter means greater profitability for you.



For information about how Victaulic fire protection systems can exceed your expectations, call 1-800-PICK-VIC today.

The smarts to keep your profitability flowing.

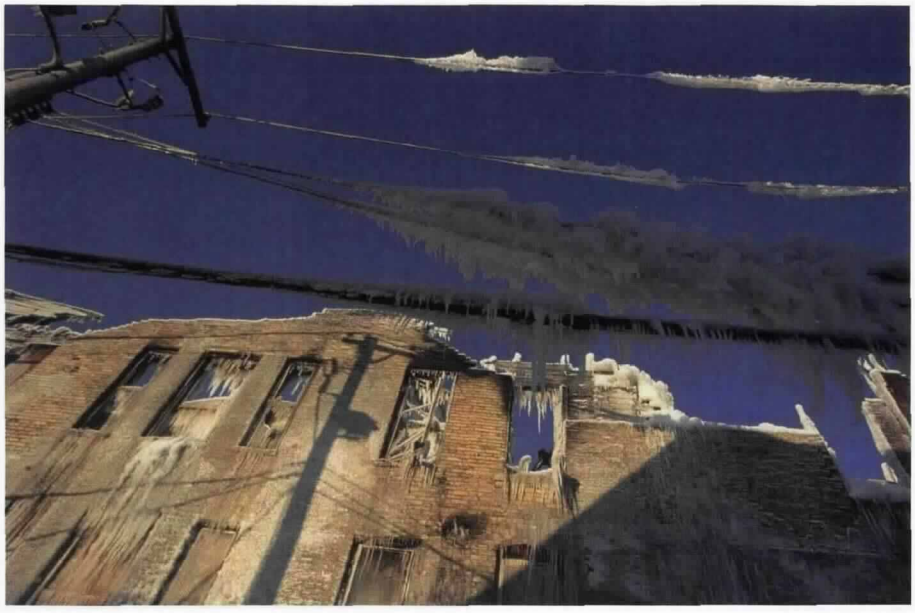
WORLD HEADQUARTERS: Easton, Pennsylvania
Offices in: Canada • Belgium • Singapore
For more information about our fire protection system solutions log onto www.victaulic.com

Victaulic®

Piping. Systems. Solutions.

Circle 029 on Reader Service Card

Managing overhaul operations



PROPERLY MANAGING THE overhaul process is a critical part of the incident commander's (IC) responsibilities. As the operation moves from the emergency stage to the non-emergency phase, the IC must reinforce the need for a more cautious and deliberate approach. Rushing to complete overhaul can result in preventable injuries, so it's essential that safety procedures, including the use of personal protective equipment, be enforced during overhaul and salvage operations.

Firefighters should not be allowed to "dress down" during overhaul operations because many hazards, such as trapped smoke, broken glass, nails protruding from the floor, and jagged metal objects, may remain. Turnouts protect firefighters from these hazards.

When a building is severely damaged, overhaul should be delayed until daylight and until structural engineers have properly evaluated the building.

Before beginning overhaul operations, firefighters should eliminate or reduce thermal and inhalation hazards. Many fire departments have instruments that measure carbon monoxide and oxygen levels, but these are not the only inhalation hazards. Damaged building components can release asbestos, PCBs, and other airborne contaminants.

Most residential structure fires don't last long, so formal rehabilitation operations are not always established. Informal rehabilitation, which signals the shift from the emergency to the non-emergency phase, should only take place when the main body of fire has been extinguished and the building thoroughly ventilated. This informal rehabilitation gives firefighters an opportunity to re-hydrate and rest, and gives the IC, safety officer, and other command personnel an opportunity to survey damaged areas and establish an overhaul plan.

During larger-scale incidents and extreme weather, formal rehabilitation operations are necessary. The IC should allow a longer, more informal rehabilitation of on-scene personnel before beginning the overhaul operation, and it may be best to use personnel who were not involved in active firefighting for this part of the operation.

When a building is severely damaged, overhaul should be delayed until daylight and until structural engineers have properly evaluated the building. If the IC ordered a defensive attack due to concerns about the structural integrity of the building, firefighters should exercise extreme caution before re-entering the building, particularly when it is dark.

Thermal-imaging systems can prove useful during overhaul operations, because the technology allows firefighters to check concealed areas without physically opening walls, ceilings, and floors. However, it isn't always effective in identifying hidden hot spots. If thermal imagining proves inconclusive, removing walls, ceilings, and floors is necessary to extinguish the fire completely. However, a total "wash down" is seldom necessary. There's a blurry line between overhaul and salvage operations and causing unnecessary property damage, but this line can be sharpened through training and experience.

After a fire has been extinguished, a building's occupants are typically anxious to return to the building to secure their belongings. And they can be very persistent in demanding that the IC allow them into the property if, to their untrained eyes, the fire is out and the building is safe. It is the IC's responsibility to determine whether the structure actually is safe before allowing occupants back in the building. Firefighters can sometimes assist by bringing personal belonging outside to waiting occupants, but occupants should never be allowed to re-occupy a building until the overhaul is complete and the IC is certain the building is safe.

PHOTOGRAPH: CORBIS

Fire-rated. And then some.

hardwood framing

impact protection


curtainwall


90-minute glass doors


2-hour glass fire walls


durability

Our glass and framing offer much more than fire protection.

These days, more demands are put on glass than simply a fire rating. That's why Technical Glass Products carries products with a broad range of capabilities, ready for use in nearly every application imaginable.

- ***Impact safety***
- ***Bullet/security glazing***
- ***Energy efficiency***
- ***Heat transfer***
- ***Thermal shock resistance***
- ***Acoustic barrier***
- ***Beveled, etched or sandblasted***
- ***Glass walls rated up to 2 hours***
- ***Full lite doors rated up to 90 minutes***
- ***Hardwood frames***
- ***Narrow profile steel frames***
- ***Curtainwall***

Visit our web site for complete information:
www.fireglass.com

TGP
Technical Glass Products™
1-888-397-FIRE

Circle 024 on Reader Service Card

Code cycle revisions

PEOPLE OFTEN ASK why codes and standards need to be revised so often. There are several reasons. NFPA investigates some large fires to determine what went wrong and why. Fire departments around the country and even outside of the U.S. send reports of fires to NFPA. These investigations and fire reports help the technical committees, who draft the code provisions, evaluate what went wrong, what code provisions need changes, what new code provisions are needed, and what code provisions worked well. It is important to remember that most requirements in the NFPA 101®, *Life Safety Code*® are there because someone died.

Another reason to revise codes is that new materials and new construction methods are always being developed.

Another reason to revise codes is that new materials and new construction methods are always being developed. When new products come on the market, the codes need to determine how to evaluate these materials and if they are appropriate for use in buildings. For example, the development of foamed plastics saw new test methods developed and new code requirements for these materials. The codes also need to be changed to address new construction features. When the first atriums were constructed in buildings there were no provisions in the code addressing atriums. Authorities having jurisdiction allowed them under the equivalency provisions of the code. The *Life Safety Code* committees then added requirements for atriums in NFPA 101.

A third important reason for revising codes is that we demand safer products and buildings in which to live, work, and play. For example, in the late 1960s and early 1970s, we constructed many high-rise buildings that were not protected with automatic sprinklers. Today, we would not consider constructing a high-rise building without protecting it with automatic sprinklers.

There is also a requirement in the American National Standards Institute (ANSI) code development process to periodically update codes and standards. NFPA is an ANSI accredited standards writing organization. ANSI requires that standards be updated at least every five years. NFPA codes and standards are revised on three- to five-year cycles. Generally, the more widely used codes and standards, such as NFPA 101 and NFPA 5000™, *Building Construction and Safety Code*™, are revised on a three-year cycle.

The most recent edition of NFPA 101 is the 2003 edition. Normally, the next edition would be the 2006 edition. However, in order to bring NFPA 101; NFPA 5000; NFPA 1, *Uniform Fire Code*; and several other widely used codes and standards into the same revision cycle, the NFPA Standards Council revised the code change cycles of several documents.

For example, codes and standards that were in the fall schedule for revision will still follow a fall schedule. Beginning in 2006, if there are no comments received on a code or standard, the Standards Council will issue the document following the fall schedule. Beginning in 2006, persons wishing to make a motion on the floor will need to submit the intent to make a motion before the NFPA June meeting. Codes and standards in the fall schedule that have comments will be available for floor motions at the annual meeting. Go to www.nfpa.org for further details under the tab "Codes & Standards" then "Regulations."

The June 2005 NFPA World Safety Conference and Exposition will include association action on approximately 42 codes and standards. The Technical Session will begin on Wednesday, June 8 and will conclude when action on all of the codes and standards up for revision is complete. Remember, the development of NFPA codes and standards is a consensus process where everyone can get involved.

There are several distinct advantages to consolidating activity into one annual NFPA meeting. Foremost, there is only one trip away from the office with the associated expense of time and money. Attending this one annual meeting, one can attend exhibits, talk with manufacturers' representatives about your fire protection needs, and attend the many education sessions available on a variety of topics. Of course, the Technical Session offers the opportunity to speak to your proposals or comments, or just keep informed about changes to the codes and standards.

CHIP CARSON is owner and president of Carson Associates, Inc.

ILLUSTRATION: DAVE EMBER

Two Wires, A Hundred Stories.

NetSOLO® BROADBAND.

The Power of Distributed Audio.

NetSOLO Broadband is a network that brings the power of Distributed Multi-Channel Audio and Digital Messaging to your most challenging applications:

- **Capability** – Live voice paging, multi-channel audio, firefighter phone and network control all on a single pair of conductors.
- **Flexibility** – Scalable architecture combines up to 64 network nodes including fire command centers, transponders, and fire alarm control panels.
- **Survivability** – True peer-to-peer architecture utilizing distributed intelligence combined with regenerating communication.
- **Reliability** – Utilizes state-of-the-art Digital Signal Processors (DSP) and proven circuitry.

If you demand a system that can grow with you into the future, choose the future of Distributed Audio. NetSOLO Broadband.

For a free product CD, visit www.firecontrolinstruments.com/netsoload.htm or contact us at (781) 471-3000.

FCI® FIRE CONTROL INSTRUMENTS
A Honeywell Company

Circle 010 on Reader Service Card

Quality and reliability of installed systems

ARE CODE-COMPLIANT fire alarm systems reliable by definition? Section 1.2.1 of the 2002 edition of NFPA 72®, *National Fire Alarm Code*®, states that "The purpose of this Code is to define the means of signal initiation, transmission, notification, and annunciation; the levels of performance; and the *reliability* [emphasis added] of the various types of fire alarm systems."

Codes and standards establish minimum levels of protection and minimum levels of inherent reliability for an installed system. However, some owners, designers, and installers use these minimum levels of performance as the upper boundary of what they perceive to be both reliability and quality.

Who controls the reliability of fire alarm system installations?

Do minimum codes and standards, in fact, establish minimum quality levels? The responsibility for quality does not center on the minimums established by the codes and standards, as much as it centers on the attitude and training of the users of those codes and standards.

The question remains: Who controls the reliability of fire alarm system installations?

In my opinion, the codes and standards process, owners, designers, equipment manufacturers, installers and maintainers, and authorities having jurisdiction (AHJ) all affect quality and thus the reliability of installed fire alarm systems.

For example, NFPA 72 requires that products be listed for their intended use. This helps ensure that there are minimum levels of operational and component reliability.

Owners must require designers, installers, and maintainers to coordinate their work with fire officials and ensure the designers oversee construction to guarantee that the fire alarm system installation meets their specifications and minimum quality standards. Owners should not expect the AHJ to provide these construction services. Finally, to ensure long-term reliability, owners must maintain the installed fire alarm system in accordance with NFPA 72.

Designers, in turn, need to understand the owner's fire protection goals and the limitations of a fire alarm system. They should know the applicable codes and how to apply them, and should never practice outside of their area of competence.

Equipment manufacturers must develop specification and data sheets to guide designers in applying and using their products. Manufacturers must also train sales staff and distributors to ensure that they can help installers and maintainers apply and use the equipment properly, understand comprehensive equipment operation manuals, and understand the product's maintenance requirements.

Installers and maintainers must be familiar with the equipment being installed, and trained and certified by the factory producing the equipment. They must also be familiar with NFPA 72 and NFPA 70, *National Electrical Code*®, as well as all state and local requirements pertaining to fire alarm system installations.

AHJs must know how to read plans and understand the training, equipment operation, and code background needed to review a design properly. They must know what to look for during their design review, possibly using checklists to ensure a complete review. It is rare that a fire inspector has the electrical background to understand fully a fire alarm system design. This background can be obtained through on-the-job training or various courses offered by NFPA and the industry. Above all, AHJs must know when to ask for help. Fire protection engineers can often be contracted for third-party assistance in reviewing complicated fire alarm system designs. Codes and standards alone are not the answer. Those involved in every step of a fire alarm system installation process must take responsibility for the role they play in adding quality to the reliability equation. Working together, all of those involved in the process will increase the reliability of installed fire alarm systems.

WAYNE D. MOORE, P.E., FSFPE, is chair of the National Fire Alarm Code Technical Correlating Committee.

ILLUSTRATION: RICHARD GOLDBERG

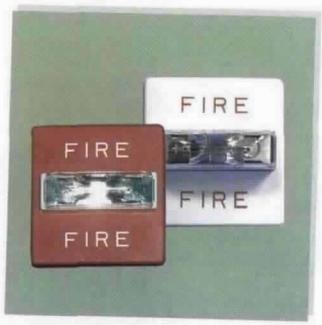
The best products for easy installation

Field selectable Multi-candela settings of 15/30/75/110cd

High Multi-candela models 115/177cd (ceiling) 135/185cd (wall)

2 selectable horn tones and 3 dB settings

Synchronize with Wheelock's sync modules or Power Supplies



Series E50 Speakers and Speaker Strobes

Field selectable Multi-candela settings of 15/30/75/110cd

High Multi-candela models 135/185cd (wall)

2 selectable tones and 2 dB settings

Synchronize with Wheelock's sync modules or Power Supplies

Series AS Audible Strobes

Field selectable Multi-candela settings of 15/30/75/110cd

High Multi-candela models 115/177cd (ceiling) 135/185cd (wall)

Synchronize with Wheelock's sync modules or Power Supplies

Series NS Horn Strobes

Series RSS Strobes

Mount to Standard 4" x 2-1/8" backbox

No extension ring required

Field selectable Multi-candela settings: 15/30/75/110cd or 135/185cd

Synchronize with Wheelock's sync modules or Power Supplies

The Leader in Fire Alarm Notification

Widest Selection of Notification Appliances

Assembled in America

wheelock INC.

Helping People Take Action℠

273 Branchport Avenue, Long Branch, NJ 07740 • (800) 631-2148 • www.wheelockinc.com

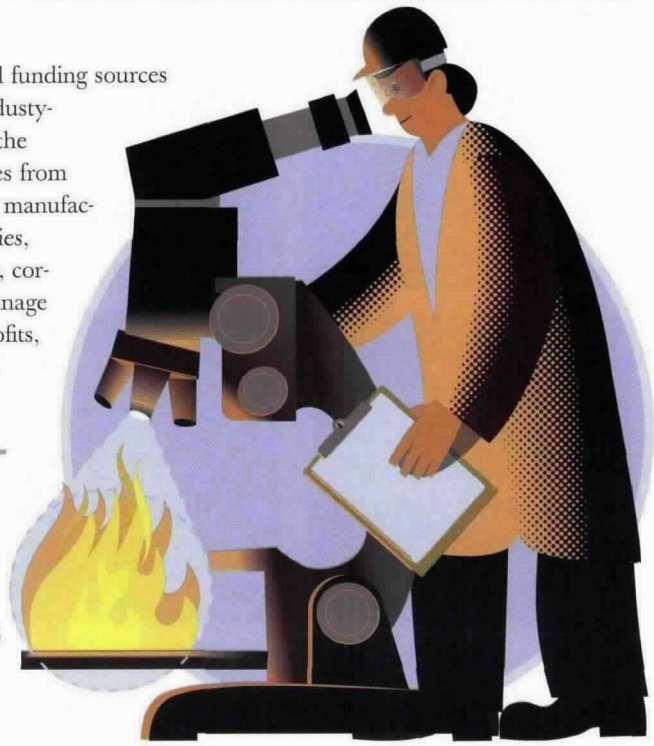
Circle 031 on Reader Service Card

Meeting the research needs of NFPA

THIS PAST FALL, Kathleen H. Almand, P.E., became the second director of The Fire Protection Research Foundation. Almand, formerly head of the Society of Fire Protection Engineers (SFPE), sees the Foundation as an untapped resource, and, in her new role, she plans to "broaden its exposure to NFPA members and constituencies." Although connected to NFPA, the Foundation, organized in 1982, operates as a separately incorporated organization. NFPA's president, Jim Shannon, chairs the Foundation's Board of Trustees, and NFPA's Board of Directors appoints the other members of the Foundation's Board.

According to Almand, the Foundation's three main functions are benchmarking the state of the art through periodic symposia, planning and developing research agendas, and performing collaborative research and development projects. Almand is particularly interested in developing a system for assessing research needs and potential projects, and refining the Foundation's procedures for managing such projects, which are initiated in a variety of ways. Sometimes, user groups, such as electrical inspectors, propose projects in areas of interest to them, says Almand. At other times, projects are undertaken to give NFPA's technical committees information vital to their participation in the codes- and standards-making process.

Project funding is another area in which Almand plans to expand the Foundation's scope, seeking "additional funding sources to broaden the largely industry-funded base." Currently, the Foundation funding comes from mix of sources, including manufacturers, insurance companies, federal and state agencies, corporations that own or manage facilities, other not-for-profits, and, occasionally, NFPA.



A study, funded by a number of wiring manufacturers, the Consumer Product Safety Commission, the U.S. Fire Administration, and State Farm Insurance, is examining aged electrical wiring in residential settings and its relationship to fire incidence.

Foundation projects

Foundation projects are "done in the public interest," says Almand, "and all results are available to the public through its Web site."

Among the Foundation's most recent projects is a long-term study of the in-ground performance of grounding electrodes, funded by the Copper Development Organization, Dominion Virginia Power, NFPA, Underwriters Laboratories, and several grounding manufacturers. Another study, funded by a number of wiring manufacturers, the Consumer Product Safety Commission, the U.S. Fire Administration, and State Farm Insurance, is examining aged electrical wiring in residential settings and its relationship to fire incidence.

Project development

Other projects are in development, including flammable and combustible liquid storage, tunnel fire detection systems, and safety issues associated with hydrogen vehicles. All in all, Almand feels the most important thing she can do in her new role is to ensure that the Foundation's programs are "well known and of value to the fire safety community." To that end, she plans to focus most of her efforts on communicating the Foundation's capabilities, determining research needs, and forming new projects.

The Foundation's Ninth Suppression & Detection Research Application Symposium, cosponsored by the SFPE, is scheduled for January 26, 27, and 28 in Orlando, Florida. The symposium, which will focus on "Bridging the Gap" between practitioners and researchers, will feature more than 25 presentations and conclude with a panel discussion on the future of fire alarms, detection, and suppression systems research. Information on the symposium, research projects, or the Foundation itself can be found at www.nfpa.org/foundation.

ILLUSTRATION: ROB DUNLEVY

Is Directional Sound Important to You?

What is Directional Sound?

Directional Sound is a whole new technology in fire safety. Traditional fire systems are designed to *notify* people, not to *guide* them. Directional Sound is an audible signal that leads people to safety in a way that today's systems cannot.

How does Directional Sound work?

Directional Sound clearly communicates the location of exits using *broadband noise.* The varying tones and intensities coming from Directional Sound devices offer easy-to-understand cues for finding the way out. As soon as people hear these devices, they *intuitively* follow them to get out quickly.

How was Directional Sound discovered?

Directional Sound was conceived at Leeds University in England and first researched by Professor Deborah Withington.

How do I know Directional Sound works?

Directional Sound is based on the science of human hearing. It is a broadband signal – what some people call "white noise" – consisting of all or most of the frequencies audible to the human ear. Numerous studies have demonstrated that when devices emitting Directional Sound are added to traditional fire systems, evacuation times are dramatically reduced. From these studies, researchers have reached four key conclusions:

First, Directional Sound devices are exceptionally effective at guiding people up and down stairwells and toward exits.

Second, Directional Sound devices will point people to the *nearest* exit, overcoming the natural human behavior that leads them out the way they entered.

Third, Directional Sound devices reduce exit times in virtually all emergency evacuation situations, including those where visibility is severely restricted.

And finally, when added to traditional sounders and exit signs, Directional Sound devices will improve a fire system's potential to save lives.

Is Directional Sound available? Where can I get it?

Directional Sound was researched and developed by Leeds University and SoundAlert Technology. System Sensor has incorporated Directional Sound into ExitPoint™ – the sound new direction in fire safety.

What is ExitPoint™?

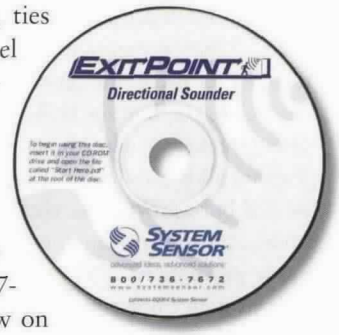
ExitPoint is a whole new concept in evacuation signaling: the audible exit sign. ExitPoint guides people to building exits – reliably, intuitively, and safely. It can reduce evacuation times up to 75%, prevent injuries, and save lives.

ExitPoint represents an extraordinary leap forward in fire safety technology. And it's just the kind of advanced idea you've come to expect from System Sensor.

Is ExitPoint recognized by listing agencies and code officials?

ExitPoint is UL 464 listed and is also under consideration for NFPA 72.

ExitPoint, from System Sensor, ties into a facility's fire control panel to give life-saving information to building occupants. For more information, visit ***exitpoint.systemsensor.com.*** For a complete Specifier's Kit, including a demonstration CD and white paper, call 800/927-6676 or circle the number below on the reader service card.



SYSTEM SENSOR®

advanced ideas. advanced solutions.™

800/927-6676

www.systemsensor.com

Circle 021 on Reader Service Card

Addressing everyone's life-safety needs

NFPA'S PUBLIC EDUCATION Department recently hosted the third Annual *Risk Watch*® Champion Conference in Miami, November 11-14, 2004. The conference brought together coalitions from 28 states, and three countries, including Canada, United Kingdom, and Scotland. The room was filled with people from with different backgrounds but all had the with one common goal: children's safety.

Unintentional injuries are more fatal to children than drugs and disease combined.

According to the *Risk Watch* Web site, in the United States, unintentional injuries are more fatal to children than drugs and disease combined. Unintentional injuries are preventable with education, and with the support of caring adults, children can learn to be much safer. Education must be stressed with positive messages to encourage safety behaviors without creating fear.

NFPA developed *Risk Watch*, a comprehensive injury prevention program designed for use in the classroom. *Risk Watch* gives children the skills and knowledge to prevent unintentional injuries. The program addresses motor vehicle safety; fire and burn prevention; chocking, suffocation, and strangulation prevention; poison prevention; falls prevention; firearms injury prevention; bike and pedestrian safety; and water safety.

Assisting advocates

NFPA introduced the Champion Award Program, a strategic initiative that assists child safety advocates implementing the *Risk Watch* injury prevention curriculum in schools. The program provides training, support, and resources needed to help safety educators implement and expand the use of *Risk Watch*.

NFPA created a network of child safety advocates, called Risk Watch Champions who implement *Risk Watch* in their communities. These dedicated people are part of the Risk Watch Champion Management Team (CMT). These teams are coordinated by state level multi-agency coalitions from fire, health, education, and law disciplines. NFPA has provided the CMTs with Field Advisors who are representatives from across the United States and Canada who and offer support to Champions.

Planning a Champion Conference to meet all the needs of our Champions is no easy task. NFPA's Public Division works diligently to provide a continuing education meeting that addresses the needs of our dynamic Champion Management Teams. We try to keep our Champions motivated so they, in turn, can motivate those around them.

The conference included topics such as "Funding in Difficult Times," "Finding and Making Injury Data Work for You," "How to Work with Elected Officials," "Marketing Injury Prevention," and "Teacher Incentives." They participated in workshops such as a SWOT (strengths, weaknesses, opportunities, and threats) Analysis, Coalition Building and Maintenance, Remembering When™, *Risk Watch*: Natural Disasters, and an improvisation workshop that helped them strengthen their coalitions. There was a lot of energy in the room as Champions had the opportunity to share accomplishments, challenges, and to network with each other.

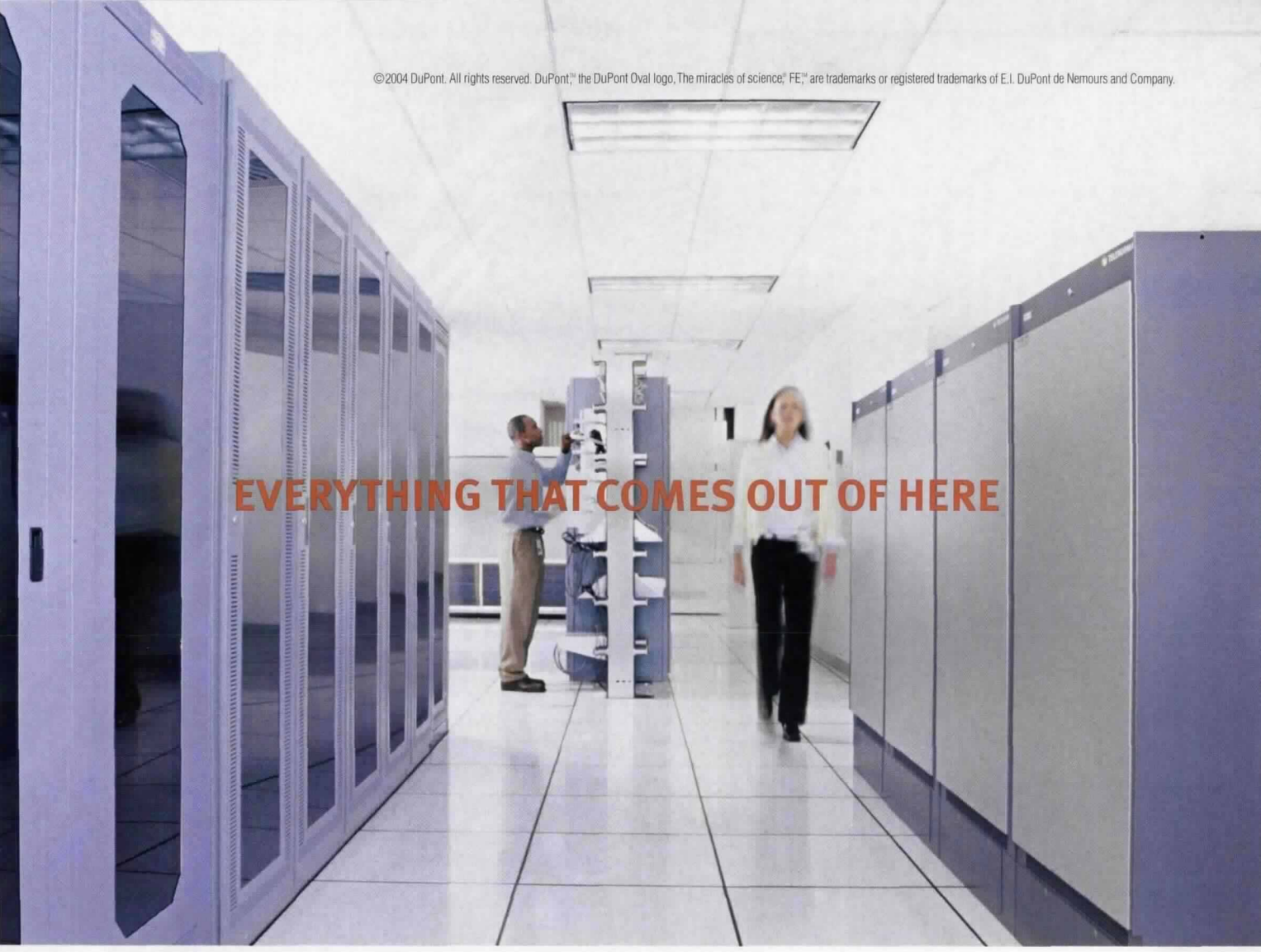
Champions also had the opportunity to honor the importance of teachers, the cornerstone of the *Risk Watch* program. The 2004 NFPA "Teacher of the Year" Award was presented at the conference. The recipient, Amy Hein, is a first grade teacher at the Hickory Bend Elementary School in Glenwood, Illinois.

"The *Risk Watch* objectives can be reviewed constantly, as students are faced with safety challenges on a daily basis. I feel proud to be a *Risk Watch* teacher, and realize that I am providing my students and their families with priceless knowledge that will help guide their decision-making throughout their lives," said Amy Hein.

NFPA's Public Education Division is already in full swing in preparing for the next meeting. Receiving comments from our Champions such as, "the conference motivates me them to go back to my their communities and work even harder," is pretty much all we need to hear to motivate us as we tackle the next meeting.

SANDRA ARAUJO is a public education specialist.

ILLUSTRATION: CYNDY PATRICK

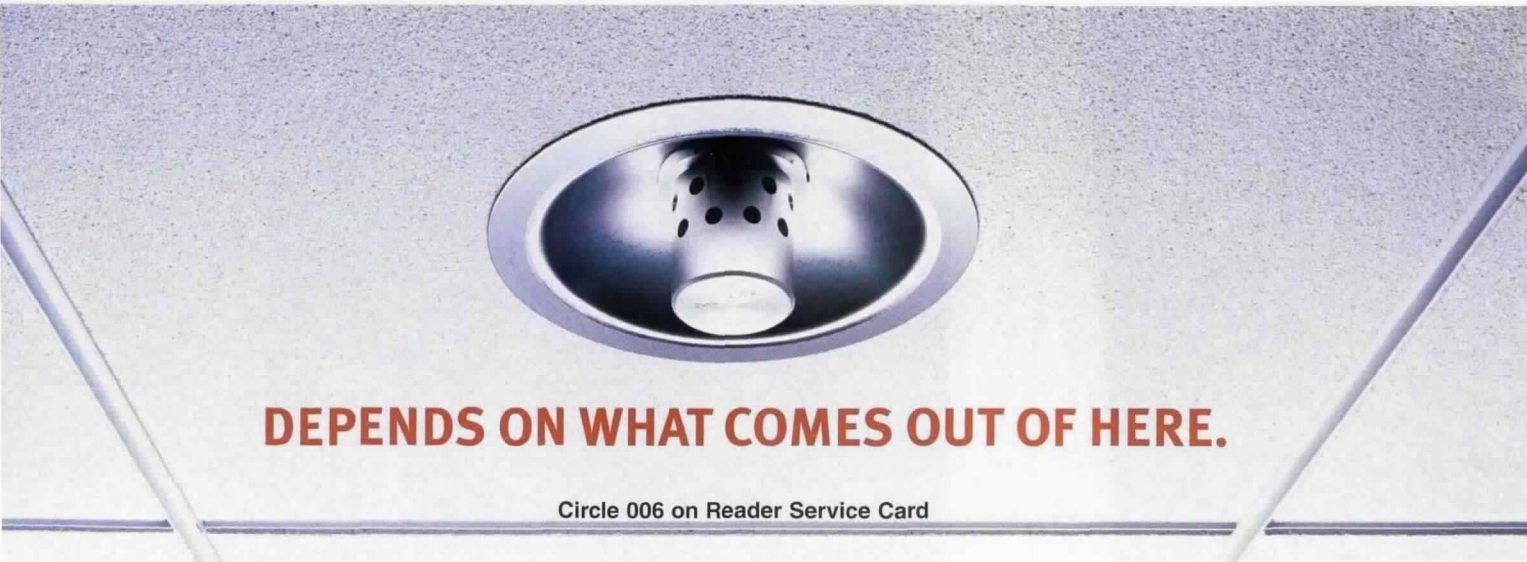


EVERYTHING THAT COMES OUT OF HERE

In the event of a fire, your uptime is as valuable as your assets. DuPont™ FE-25™ clean fire extinguishing agent acts quickly and safely, without sacrificing performance. FE-25™ requires 20% less agent to do the same job as other leading extinguishants. It's proven superior fire protection that's more cost effective and has less environmental impact. *Call 1-800-473-7790 or log on to dupont.com/fire for more information.*

DUPONT

The miracles of science™



DEPENDS ON WHAT COMES OUT OF HERE.

Circle 006 on Reader Service Card

On the **rise**

Chicago adopts high-rise ordinance and amends installation standards to reduce costs.

By **Carl F. Baldassarra, P.E.**

LIKE MANY OTHER CITIES in the United States, the City of Chicago amended its building code in the mid-1970s to include provisions specifically applicable to new high-rise buildings. The current edition of the Chicago Building Code (CBC) defines high-rise buildings as those having a height of 80 feet (24 meters) or more. The high-rise provisions generally require automatic sprinkler systems, standpipe systems, occupant and fire department voice communication systems, stairway unlocking systems and other passive and active systems similar to the provisions found in the model building codes.

However—again, like many other cities—the issue of fire safety in existing high-rise buildings has been a challenge. In response to a multiple-fatality fire in the Cook County Administration Building on October 17, 2003, Chicago officials considered a number of proposals and began development of an ordinance to address fire safety for an estimated 1,300 existing high-rise buildings in a comprehensive manner. The objective of the ordinance was to provide a reasonable level of safety for the occupants of high-rise buildings and to do so in an economical manner that sustains the city's economic strength and preserves jobs and business opportunities. Schirmer Engineering Corporation assisted the city staff in reviewing the criteria in the national model codes; reviewing the experience of other cities and jurisdictions adopting similar legislation; considering various issues including practicality, effectiveness, experience, new technology, and costs; and in developing the resulting ordinance.

The Chicago Department of Construction and Permits estimates that there are approximately 1,700 high-rise buildings in the city. Of these, approximately 1,300 were built pre-1975 and 400 were built post-1975. Of the 1,300 pre-1975 buildings, it is estimated that 1,100 buildings are primarily of residential occupancy. It is clear that, with the exception of New York, no other US city has the number of high-rise residential buildings and dwelling units as Chicago. In recent years, owners of high-rise buildings in Chicago have been subject to a number of ordinances, which have had a major financial impact upon some of the buildings. These ordinances require: exterior building facade inspections and repairs (1996, 2003), emergency generators (2000) and evacuation plans (2001). Some building owners have reported expenses of millions of dollars to comply with these previously

PHOTOGRAPH: DIGIMARC

Chicago's Sears Tower (center)

adopted ordinances. Clearly, there is a heightened sensitivity to an additional ordinance, which may require costly fire safety improvements.

The issue of safety for existing buildings is especially difficult because of practical difficulties and costs involved in making improvements in these buildings. In the past, a number of high-rise building fire safety ordinances were proposed, only to fail because of the associated high cost of compliance. A new approach was needed.

Accordingly, the proposed ordinance was limited in its scope to fire protection features judged to be of basic fire safety importance. While some cities elected to essentially require their existing buildings to meet the same fire safety criteria required of new buildings, such was not the case in Chicago. For example, costly smoke control and pressurization systems, supplied by emergency power, were not deemed as minimum required features given automatic sprinkler protection for commercial buildings and the degree of compartmentation included in residential buildings. In addition, certain provisions in the city's historically tough building and fire codes were relaxed to reduce the cost of installation and, in the case of unsprinklered buildings, to encourage voluntary sprinkler system installations–without materially reducing the reliability or effectiveness of the systems.

A review of the current codes demonstrated that, in some cases, various provisions in the city's codes evolved in response to a number of long-addressed concerns and, in other cases, the codes were not modified to reflect the use of current technology and materials. Therefore, NFPA standards were used as the basis to allow the use of effective, reliable, and more economical installations of fire protection systems.

As a result of the reviews and ordinance development in conjunction with city staff, a draft ordinance was developed and posted on the city's Web site. A number of public hearings were conducted, and the ordinance was subsequently revised. The ordinance was adopted by the City Council on December 15, 2004.

Ordinance Provisions

The resulting ordinance provides a reasonable balance between safety and the costs, and consists of the following major elements:

- Evacuation plans for all high-rise buildings, electronically filed with the city's 911 center;
- Prohibiting locked stairway doors against re-entry, except for automatic and manual unlocking systems, in all buildings with stairways serving four or more stories;
- Voice communication systems for occupant notification and fire department communication in most high-rise buildings;
- Automatic sprinkler protection for commercial high-rise buildings, other than "landmarked" buildings;
- Life Safety Evaluations (LSE) to verify a minimum level of fire safety for non-sprinklered high-rise buildings;
- Modification of material and installation criteria to allow more economical installations and encourage optional fire protection improvements; and,
- Requirement for a minimum one-hour fire resistive stairway enclosure in residential buildings.
- In addition to the above proposals, the Administration is also seeking property tax relief and tax incentives for fire safety improvements at the State and County levels. This is in addition to the tax incentives included in pending Federal legislation, generally applicable to commercial buildings.

The major elements included in the ordinance are discussed in greater detail in the following sections.

Evacuation Plans

The proposed ordinance will require the owners of all high-rise buildings to file electronic copies of evacuation plans for each building with the city's 911 Center. The evacuation plans are to include typical floor plans to facilitate on-site search and rescue operations by communication with the 911 Center personnel. The city is also studying technology to allow the display of the information in fire department vehicles on the fire ground in the near future.

Stairway Door Locking

Prior to October 2003, a number of pre-1975 high-rise buildings maintained locked doors from the stairway side of the stair enclosure in the interest of building security. While prohibited for high-rise buildings constructed after 1975, the Chicago Building Code was silent on the application of such requirements in pre-1975 buildings. Shortly after the fire and before the development of a comprehensive draft ordinance, the Chicago City Council adopted an ordinance that prohibits stairway doors locked against re-entry into the building unless such doors are equipped with automatic and manual unlocking systems. As a temporary measure, the ordinance allows locked stairway doors on up to four intervening floors, based upon the provisions in NFPA 101®, *Life Safety Code®*, but only until January 1, 2005.

Voice Communication Systems

Human behavior studies indicate that it is important to provide timely and accurate information and instructions to building occupants, particularly in the post-September 11 era. The current Chicago Building Code (CBC) criteria for new high-rise buildings require one-way voice occupant notification systems in public areas and in office tenant spaces over 5,000 square feet (465 square meters). In addition, the current criteria for new high-rise buildings require two-way communication systems for fire department

In developing the new ordinance, NFPA standards including NFPA 13, NFPA 72, and NFPA 101 were used as the basis to allow the use of effective, reliable, and more economical installations of fire protection systems.

use. Costs for these systems were judged to be reasonable when viewed on a per dwelling unit-basis for residential buildings and on a per square foot basis for commercial buildings.

As a means of lessening the financial impact upon residential building owners, no voice systems are required in existing fully sprinklered non-transient residential buildings, and two-way voice systems are not required in non-transient residential buildings that contain fewer than 15 or fewer stories and 60 or fewer dwelling units. In addition, the ordinance includes performance-based language that permits other existing voice communication systems to be used in non-transient residential buildings, provided that the systems meet certain criteria and are judged to be acceptable by the fire department. The ordinance allows a seven-year installation period for the voice systems.

To facilitate the installation of the voice communication systems and fire detection systems associated with the sprinkler systems, a number of modifications were made to the existing provisions of the CBC to allow more economical installations and encourage protection systems above the minimum code requirements. For systems installed as a result of this ordinance only, the modifications allow the installation of low-voltage electrical risers associated with fire alarm and communication systems within stairway enclosures, greatly facilitating the installation in existing buildings.

The CBC also reflected a degree of conservatism in that, for new construction, detection system wiring and notification system wiring cannot be run in the same electrical conduit and the equipment cannot be installed in the same equipment enclosure. The ordinance recognizes wiring methods and listed equipment per NFPA 72, *National Fire Alarm Code®*, greatly reducing the cost of installations. In addition, the ordinance allows the central station monitoring to be accomplished using digital alarm communication equipment per NFPA 72, not currently approved in the city.

The above modifications have been estimated to save as much as 25 percent of the installation cost of the detection and communication systems over the traditional installation methods.

Automatic Sprinkler Protection

The benefits of automatic sprinkler protection are well-known to city officials and need not be repeated here. While the frequency of fatal fires in high-rise commercial buildings was low, the large numbers of persons in commercial high-rise buildings, the nature of the occupancy and typical building geometries were judged to present an unacceptable risk. On the other hand, an ordinance mandating sprinkler protection in a large number of residential buildings, costing hundreds of millions of dollars, was not considered necessary because of the non-transient nature of the occupants and the inherent level of compartmentation in residential buildings. A review of high-rise residential building fire records, in fact, showed a high degree of the buildings' ability to limit fires to the unit of origin. Buildings designated as landmarks were also considered to present practical difficulties and, therefore, were exempted from the draft ordinance. Nevertheless, there was a concern about verifying that the residential and landmarked buildings' construction integrity has been maintained since originally constructed.

The ordinance mandates the installation of sprinklers in high-rise buildings, with the following exceptions: open-air parking facilities, open-air portions of stadiums, non-transient residential buildings, designated landmark buildings and contributing (landmark) buildings. The requirement for sprinklers affects almost all commercial buildings in the city. Knowing the concerns of the real estate industry expressed in previous considerations of a retrofit ordinance, the ordinance was drafted to allow a 12-year installation period, providing that one-third of

PHOTOGRAPH: CORBIS

the installation is completed in each of three four-year incremental periods. A plan of compliance is required to be submitted to the city within one year.

Again, it has been estimated that there are approximately 1,700 high-rise buildings in the city. A survey conducted by the Building Owners and Managers Association (BOMA), which represents 269 commercial buildings and 94 percent of the commercial square footage in Chicago, identified 87 buildings, representing approximately 24.7 million square feet (2.3 million square meters), as being affected by this provision. Most of these buildings are Class B and Class C buildings, an industry term reflecting that they are not the newer, higher rental-rate properties, making it difficult for the property owners to raise rental rates to amortize the cost of the sprinkler installations. BOMA-Chicago estimated that there is a total of 35 million square feet (3.2 million square meters) of unsprinklered office space in the city, 17 million square feet (1.5 million square meters) of which may require asbestos abatement. It was also noted that sprinkler retrofits frequently involve much more than the cost of the sprinkler system alone. For example, a major sprinkler retrofit installation will involve substantially upgrading or replacing the building's fire-alarm and supervisory system, which monitors the sprinkler system, possibly triggering a further upgrade to comply with Americans with Disabilities Act.

The city has, over the years, enforced certain installation practices, which exceed the criteria included in NFPA 13, *Installation of Sprinkler Systems*. In order to facilitate the required sprinkler system installations, reducing installation costs–and to encourage the voluntary installation of sprinkler protection in the non-transient residential and landmark buildings–amendments to the existing sprinkler design and installation criteria were included in the ordinance.

The current provisions of the CBC require that the building's fire protection water supply be based upon the sprinkler system demand plus one-half of the standpipe system demand. In existing buildings, this frequently means that the existing standpipe piping and fire pumps are inadequate, requiring replacement. Such replacements also have a "domino effect," requiring upgrading of the pumps' electrical service, water supply piping and emergency generator, etc. The ordinance recognizes the water supply as specified in NFPA 13 as adequate for the existing high-rise buildings, in most cases avoiding the costly fire pump and piping replacements.

The ordinance also allows the design of the systems per NFPA 13, with more liberal–yet effective–sprinkler densities than presently allowed in the CBC, the use of extended coverage sprinklers and other listed sprinklers, and all types of listed piping materials. These sprinklers and materials have not historically been approved. The amendments included in the ordinance are expected to save many thousands of dollars in the large commercial buildings without compromising the effectiveness or reliability of the protection, as demonstrated by years of national experience.

Life Safety Evaluation

To address the issue of providing a reasonable level of safety in the non-sprinklered high-rise buildings, the ordinance includes an approach similar to the concept of the "engineered life safety system" included in the *Life Safety Code* as an alternative to automatic sprinkler protection. The ordinance prescribes that existing high-rise business and residential buildings which are not sprinkleredbuildings that are not sprinklered be subject to a "Life Safety Evaluation (LSE)" to demonstrate that a minimum level of safety is provided. Although certain parameters are discussed in the *Life Safety Code*, specific criteria for the engineered life safety system are not provided. Nevertheless, the *Life Safety Code* requires that the LSE be approved by the authority having jurisdiction having jurisdiction approve the LSE.

After years of experiencing high-rise fires and fatalities, Chicago's ordinance for existing high-rise buildings constitutes a comprehensive, balanced approach to the problem.

The definition of an LSE specifically for existing non-sprinklered residential and landmark commercial buildings first required that an objective be specified with respect to the desired level of safety. After due consideration, a policy decision was made to establish the minimum level of safety consistent with the provisions in the Chicago Building Code specifically applicable to existing buildings. It was the collective judgment of the team that rigorous compliance with the CBC provisions for existing buildings would provide a reasonable level of fire safety. From this review, it was later determined that the CBC requirement for minimum fire resistance rated stairway enclosures in residential buildings was not clear and that a revision to clarify the requirement was necessary. This minimum requirement was included in the ordinance.

Accordingly, because the CBC requirements differ for residential and commercial high-rise buildings, two LSEs were developed to implement this portion of the

ordinance, one for non-transient residential buildings, and one for commercial (landmark) buildings, which need not be sprinklered per the proposed ordinance. The methodologies of conducting the LSEs are similar to the Fire Safety Evaluation Systems (FSESs) included in NFPA 101A, *Alternative Appproaches to Life Safety*. However, the LSEs were specifically developed to measure the buildings' level of compliance with the minimum provisions of the CBC under which they were designed and constructed.

Like other FSESs, the LSEs for this application include 18 major parameters: building height; construction type; compartment area; tenant separation; corridor walls; vertical openings; HVAC systems; smoke detection; communication systems; smoke control; number and capacity of the means of egress; dead-end corridors; exit travel distance; elevator controls; emergency lighting; mixed occupancy separation; automatic sprinklers and auxiliary uses. The intention of the LSE is to demonstrate that a minimum level of fire safety is achieved in areas involving fire safety, means of egress and general safety, and to allow alternative methods to achieve compliance if the minimum level of protection is not achieved. It is not intended, however, as a method to circumvent the minimum provisions of the CBC applicable to existing buildings. The ordinance will require that the LSE be conducted by a licensed architect or engineer and that a report be completed within 12 months after the passage of the ordinance. The city is responsible for reviewing and approving the LSE for each building, an objective measure of the relative level of safety of the building. Building owners will have up to seven years to complete repairs in order to achieve compliance with the LSE, or owners can elect to sprinkler the building within the 12-year period.

LSEs were conducted on a sample of existing high-rise buildings. It was determined that certain buildings would not meet the minimum criteria. Certain maintenance-related deficiencies were also noted. It was the collective judgment of the staff and the city's consultant that the LSE identified potentially life-threatening conditions, as was intended, and that the corrective measures would be substantially less expensive than providing automatic sprinkler protection in the same buildings.

Adopting the Ordinance

The elected officials adopting the ordinance were faced with choices such as: What level of safety is needed for existing buildings? How much are the citizens willing to pay for the improved level of safety? In this case, the proposed ordinance differed from previous, unsuccessful attempts at a high-rise ordinance for existing buildings in that it includes a number of cost-saving provisions, tax incentives, reasonable compliance periods, and alternatives to a blanket requirement for automatic sprinkler installations. The legislative body adopting the ordinance, the 50-member City Council and the mayor, balanced the safety interests of the community against the costs of compliance and reached a consensus that the ordinance should be adopted.

The City Council's action on this ordinance was a determination of an appropriate balance of fire safety and cost for the citizens of the community in order to provide a reasonable level of safety for the occupants of high-rise buildings.

Conclusion

The process described above brought together the various stakeholders and interests affected by a fire safety ordinance for high-rise buildings. After years of experiencing high-rise fires and fatalities, the proposed ordinance for existing high-rise buildings constitutes a comprehensive, balanced approach to the problem that was finally adopted. The ordinance requires automatic sprinklers for high-rise commercial buildings, reflecting the level of risk associated with large numbers of building occupants and the nature of the occupancies which generally include: higher fuel loads, transient occupants not familiar with their surroundings and building geometries allowing for the continuity of combustibles. The LSE required for non-sprinklered high-rise buildings will demonstrate that a reasonable level of safety is provided for those buildings, as well. The various modifications to the material and installation standards, as well as the tax incentives, are intended to assist building owners in making economic decisions in favor of a greater level of safety.

All stakeholders have benefited from the process. Citizens are provided a greater assurance of life safety in the buildings in which they live, work, and shop. Commercial building owners have benefited by helping shape an ordinance that provides the requisite level of safety, accomplished within reasonable time frames, installation cost reductions and tax incentives.

Residential property owners enjoyed the benefits of fire safety improvements without a mandate for automatic sprinklers, accomplished through application of a Life Safety Evaluation, while installation cost reductions and tax incentives remain available to encourage voluntary installations, city officials have fulfilled their responsibility to provide a reasonable level of safety for the citizens and visitors of the affected buildings.

CARL F. BALDASSARRA is President of Schirmer Engineering Corporation, a national firm of fire protection engineers. Mr. Baldassarra is actively involved in the model code development process for more than 30 years and serves on many NFPA technical committees. He is a registered professional engineer and a member of NFPA, ICC, and SFPE.

NFPA 730 AND NFPA 731

THE NEW NFPA SECURITY GUIDE AND STANDARD increase the quality and reliability of security system installations.

By **WAYNE D. MOORE, P.E., FSFPE**

INTRUDER DETECTED

DESPITE NUMEROUS REQUESTS by authorities having jurisdiction (AHJs), NFPA's entrance into the security systems arena was delayed since the early 1990s. Today, however, NFPA is poised to take a strong role with the development of a consensus-based standard and a guide to premises security that are up for adoption in June.

The history of the on-again, off-again standards began in July 1994, when the Standards Council voted to establish a Burglary/Security Alarm Systems Project. When the NFPA Board of Directors directed the Standards Council to reconsider the project in March 1995, the Council solicited input from the security industry and, in July voted not to proceed with the project because there appeared to be no interest in moving forward. Later that year, the insurance industry reinitiated its request on the broader subject of premises security, which led to a panel discussion at the November 1995 NFPA Fall Meeting. In January 1996, the Standards Council again voted not to proceed with the project because it did not perceive a clear consensus about it.

In June 1999, however, the insurance industry asked the Standards Council to reconsider and that November, the NFPA Board of Directors endorsed a full set of codes for the built environment, including a new Premises Security Project. In April 2000, the Standards Council reaffirmed its decision to proceed with the project, and by July, it approved the project's initial scope.

In January 2001, the Standards Council revised the scope to give the Technical Committee on Premises Security "the primary responsibility for documents on the overall security program for the protection of premises, people, property, and information specific to a particular occupancy." And by April 2001, the Standards Council had appointed the committee's start-up roster.

ILLUSTRATION: EBOY

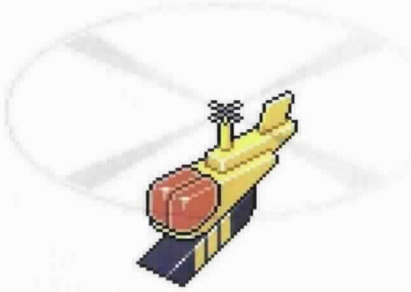

SAFE
duke
duke

The early stages

In the early stages of the project, the security industry expressed concerns about a fire-oriented organization developing security standards, as it didn't "have the security expertise to develop security standards." The security industry was also worried that such a standard might "open up the industry to litigation."

To help assuage these fears, NFPA made sure that all those affected by the proposed guidelines and standard knew the work was underway, making drafts available for public review and comment in the ANSI Reporter, the Federal Register, the American Society for Industrial Security's (ASIS) *Security Management* magazine, *NFPA Journal*, the NFPA Web site, *Security Systems News*, and other publications. In addition, the NFPA Standards Council appointed to the Premises Security Technical Committee representatives from the insurance industry, the American Hotel and Lodging Association, ASIS, the Virginia Crime Prevention Association, the International Fraternal Police Association, Underwriters Laboratories (UL), and the Security Industry Association (SIA), as well as experts in loss prevention and security, manufacturers of security products, and installers and maintainers of security systems.

NFPA made sure that all those affected by the standard and guidelines knew the work was underway, making drafts available for review and comment.



A standard and a guide

The technical committee decided to develop two documents: NFPA 730, *Guide for Premises Security*, which addresses the application of security principles based on occupancies, and NFPA 731, *Installation of Electronic Premises Security Systems*, which addresses the installation of security systems equipment. Separate task groups were formed to develop each document, which the technical committee reviewed.

NFPA 730 proved to be the most difficult to gain consensus among the committee membership. Originally begun as a code, the document was first transformed into a recommended practice and then became a guide. In the NFPA process, a "guide" is defined as "a document that is advisory or informative in nature and that contains only non-mandatory provisions…the document as a whole is not suitable for adoption into law."

NFPA 730, based on risk assessment principles, is performance- and occupancy-based and covers basic information needed to make security-based decisions, including referenced publications, definitions, general security, vulnerability assessment, exterior security devices and systems, physical security devices, interior security devices and systems, security personnel, and security planning. The document also provides guidance for security protection in such occupancies as educational facilities, health-care facilities, one- and two-family dwellings, lodging facilities, apartment buildings, restaurants, shopping centers, retail establishments, office buildings, and industrial and parking facilities. And the last chapter provides security guidance for special events, regardless of occupancy.

Unlike the occupancy-based NFPA 730, NFPA 731 is an installation standard with specific requirements for the various systems found in the security arena. It is the first proposed standard in the history of security systems the primary purpose of which is "to define the means of signal initiation, transmission, notification, and annunciation, as well as the levels of performance and the reliability of electronic security systems."

The standard, which is similar to NFPA 72, *National Fire Alarm Code*®, took an 11-member task group of representatives from the Central Station Alarm Association; the SIA; the National Electrical Contractors Association; the insurance industry and testing laboratories; the Oxnard, California, Police Department; the Federal Bureau of Investigation; and the U.S. Secret Service two years to develop. It was formulated in response to the frustration many police officials feel when forced to respond to false alarms from poorly installed or misapplied security systems, the design, application, and installation of which they have little or no input. Many departments have begun implementing local ordinances to levy fines against the owners and, in some cases, monitoring companies of systems that reach a predetermined number of false alarms. In some extreme cases, the police even refuse to respond to premises when their

security alarm signal systems "cry wolf" too many times in a week or month.

The technical committee decided that the first edition of NFPA 731 would only address protected premises from the property line to the interior of the premises and that it would not address the operation of a central station as it relates to security-signal monitoring. The committee was aware of other applicable UL, SIA, and industry standards that affect the installation of security systems and referenced or incorporated those requirements into NFPA 731.

The primary focus of the first edition of NFPA 731 is on intrusion detection systems and the reduction of false alarms due to poor installation and application. To this end, the document addresses access control and closed circuit television (CCTV), the integration of these systems, and the interface of premises security systems with life-safety systems, establishing the minimum required levels of performance, extent of redundancy, and quality. NFPA 731 does not require a level of premises security or establish the only methods by which the requirements are to be achieved.

NFPA 731 also proposes–for the first time in the security systems industry–requirements for those involved in security system design, noting that only "persons who are experienced in the proper design, application, installation, and testing of premises security systems shall develop specifications in accordance with this standard." Among those the standard deems qualified are trained and certified equipment manufacturers' personnel, personnel licensed and certified by state or local authorities, and personnel certified by an accreditation program acceptable to the AHJ.

NFPA 731 requires that system designers be identified on the system design documents and that evidence of their qualifications be provided to the AHJ when requested.

Security and the NEC®

NFPA 731 specifically requires that "installation of all wiring, cable, and equipment shall be [done in] a workman-like manner in accordance with NFPA 70, National Electrical Code...." Although NFPA 70, *National Electrical Code®* (NEC), has always covered the installation of premises security systems, many installers ignored its requirements because AHJs were not aware of them.

NFPA 731 includes requirements for systems encountered when providing electronic premises security and intrusion detection systems, including perimeter and space detection for exterior and interior applications. To reduce false alarms, it requires that "the maximum interval of time between the opening of an entry door and reaching the mechanism that is used to disarm the system...be no greater than one-half of the entry delay time programmed for the system." And to reduce false alarms in exterior detection systems, NFPA 731 requires that signals from exterior detection devices not be retransmitted to the AHJ unless an intrusion has been physically verified either on-site or by video.

NFPA 731 provides requirements for applying and installing electronic access control equipment, including portals, readers, locking systems, and position sensors, as well as egress and integration with other security and fire systems.

It also includes requirements for CCTV system cameras, camera placement and picture quality, reflectance, lens speed, enclosures, hardware, mounting, environment, and coaxial and fiber-optic cables, as well as analog and digital imaging systems. Requirements for holdup, duress, and ambush systems include both public and private duress alarm systems and manual duress ambush systems.

Because the law enforcement community feels that maintaining intrusion detection systems is paramount to reducing false alarms, NFPA 731 establishes the minimum requirements for inspection, testing, and maintenance of premises security systems and for test methods, test frequency, and impairments.

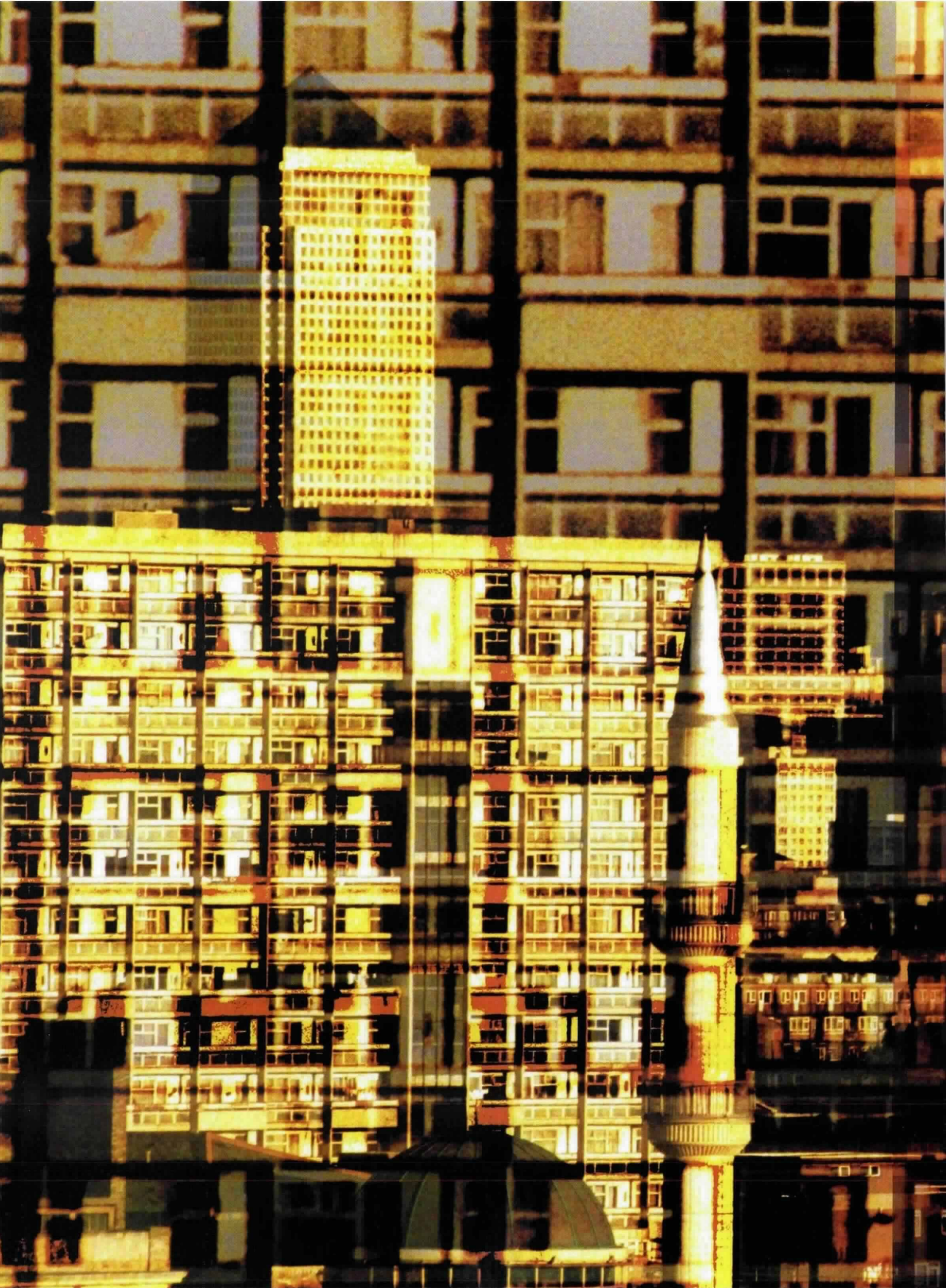
Objections

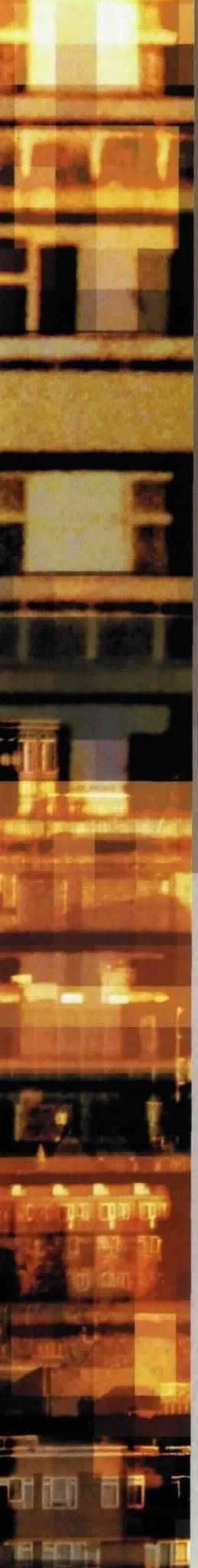
NFPA 730 and NFPA 731 are up for adoption by the membership at the 2005 NFPA World Fire Safety Conference and Exposition® (WSCE) in Las Vegas. The technical committee has addressed the comments it received from the public and industry, and its response will be published in the Report on Comments, which will be also presented at the 2005 WSCE. If approved by the membership, both documents will be issued in August or September 2005.

As often happens when new documents are being developed, some people see NFPA 731 and NFPA 730 as threats to business as usual and argue that the process is flawed or that the documents are not complete. Since the publication of the drafts of NFPA 730 and NFPA 731 and the submission of the committee's Report on Proposals, it's become evident that there is opposition to the standards among some members of the security industry, who have tried to delay and dilute them. However, these individuals rarely submit proposals or comments to better define the guidance or requirements. We hope they will realize that every technical installation and application document is a work in progress and that proposals and comments are always welcome. Fortunately, most in the security community realize the unregulated status quo is unacceptable and continue to provide valuable input into the documents' development.

We are confident that the NFPA process will not only improve security in the built environment but will provide those in the security industry the opportunity to be heard.

WAYNE D. MOORE, P.E., chairs the Technical Committee on Premises Security and is director of Hughes Associates' New England offices.





By **Donald L. Schmidt**

NFPA 1600

THE NATIONAL PREPAREDNESS STANDARD

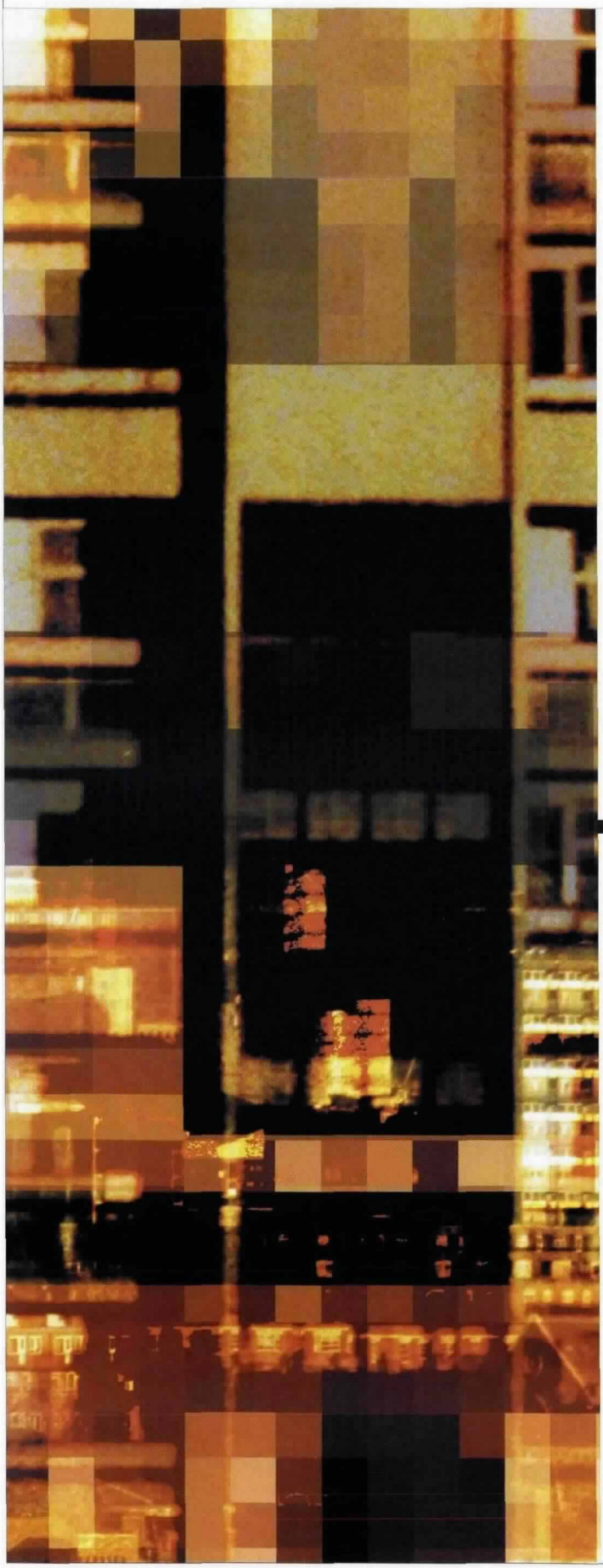
NFPA 1600 GIVES businesses and other organizations a foundation document to protect their employees and customers in the event of a terrorist attack.

A SWEEPING OVERHAUL of the U.S. intelligence community includes provisions to make NFPA 1600, *Disaster/Emergency Management and Business Continuity Programs*, the national preparedness standard.

The act was approved by the Senate by a 89-2 vote, and in the House on a vote of 336-75. President Bush signed the bill into law on December 17, 2004. The law implements many of the recommendations made by the National Commission on Terrorist Attacks Upon the United States, better known as the 9/11 Commission.

The provision of the law highlighting NFPA 1600 is Section 7305, Private Sector Preparedness (B) Sense of Congress on private sector preparedness, which states "It is the sense of Congress that the Secretary of Homeland Security should promote, where appropriate, the adoption of voluntary national preparedness standards such as the private sector preparedness standard developed by the American National Standards Institute and based on the National Fire Protection Association 1600 Standard on Disaster/Emergency Management and Business Continuity Programs."

The Commission recommended that NFPA 1600 be recognized as the National Preparedness Standard. The Commission reviewed the need for private sector preparedness during their public hearings and noted that "the private sector controls 85 percent of the critical infrastructure in the nation," and "the 'first' first responders will almost certainly be civilians."



The Commission acknowledged the lack of a standard as a principal contributing factor to the lack of private sector preparedness and asked the American National Standards Institute (ANSI) to develop a consensus on a standard for the private sector. ANSI convened its Homeland Security Standards Panel (HSSP), which held a series of workshops attended by representatives of many industries and associations in the private sector as well as public sector officials. After reviewing available documents and studying NFPA 1600, ANSI's HSSP endorsed NFPA 1600.

NFPA 1600 has become well known in the public sector since the Emergency Management Accreditation Program (EMAP) began using NFPA 1600 as criteria for accreditation of public sector emergency management programs. EMAP is voluntary, national accreditation process for public emergency management

NFPA 1600 has become well known in the public sector since the Emergency Management Accreditation Program began using it as criteria for accreditation of public sector emergency management programs.

program at the state, territorial, and local level. Surprisingly, however, the standard has not received as much attention in the private sector. The recommendation of the Commission has shined a bright spotlight on NFPA 1600, and now the document is receiving much more attention from business and industry.

The United States Congress actively addressed the 9/11 Commission's recommendations. HR 4830, the "Private Sector Preparedness Act of 2004," was filed and its purpose is to enhance private sector preparedness. The program elements within this legislation closely mirror those of NFPA 1600 and the bill directs the Secretary of Homeland Security to: "... support the development of, promulgate, and regularly update as necessary national voluntary consensus standards for private sector emergency preparedness. Such standards include the National Fire Protection Association 1600 Standard on Disaster/Emergency Management and Business Continuity Programs."

NFPA 1600 isn't a handbook or "how-to" guide with instructions on building a comprehensive program. Instead, it outlines the management and elements that organizations should use to develop a program for mitigation, preparedness, response, and recovery. The

Technical Committee on Emergency Management and Business Continuity has declined to prescribe a program development process leaving it up to each entity to follow a method that meets the specific needs of the entity.

NFPA 1600 requires development of a documented program that defines the entity's policy, goals, objectives, plans, and procedures. The standard also requires appointment of a program coordinator to work in conjunction with an advisory committee to develop the program. Specific program elements include: hazard identification, risk assessment, and impact analysis; hazard mitigation; resource management; mutual aid; planning; direction, control and coordination; communications and warning; operations and procedures; logistics and facilities; training, exercises, evaluations, and corrective actions; crisis communications and public information; and finance and administration. NFPA 1600 also requires compliance with applicable regulatory requirements.

NFPA 1600 requires an "all hazards" approach. There has been significant emphasis over the past three years on preparedness for terrorist attacks-and much work remains to be done. However, hurricanes, tornadoes, flooding, and other natural and manmade disasters continue to take a significant toll in lives lost, property damage, and business interruption. NFPA 1600 requires assessment of all hazards that might impact people, property, operations, and the environment. Risk assessment should quantify the probability of occurrence and the severity of their consequences. A business impact analysis should quantify the impact a disaster will have on the organizations' mission, as well as direct and indirect financial consequences. The business impact analysis enables an organization to evaluate the cost-effectiveness of mitigation efforts and determine how much to invest in preparedness, response, and recovery plans.

Any threat, hazard or peril with significant impact potential should be mitigated-if possible and practical. Locating a new building so it is less vulnerable to natural hazards or designing a building to withstand hurricane wind forces or seismic loads are examples of mitigation. Installation of fire detection, suppression,

The 9/11 Commission hearings.

PHOTOGRAPH: NEWSCOM

9/11 COMMISSION

EMILY L. WALKER, who served as a staff member and family liaison to the National Commission on Terrorist Attacks (9/11 Commission), addressed the NFPA Fall Education Conference in November 2004 and urged private sector support of NFPA 1600, *Disaster/Emergency Management, and Business Continuity Programs.*

The standard, which was recommended by the commission and endorsed by the Secretary of the Department of Homeland Security[1], establishes a common set of criteria and terminology from which the private sector can begin the process of preparing critical national infrastructures for disaster, natural disasters, or acts of terrorism.

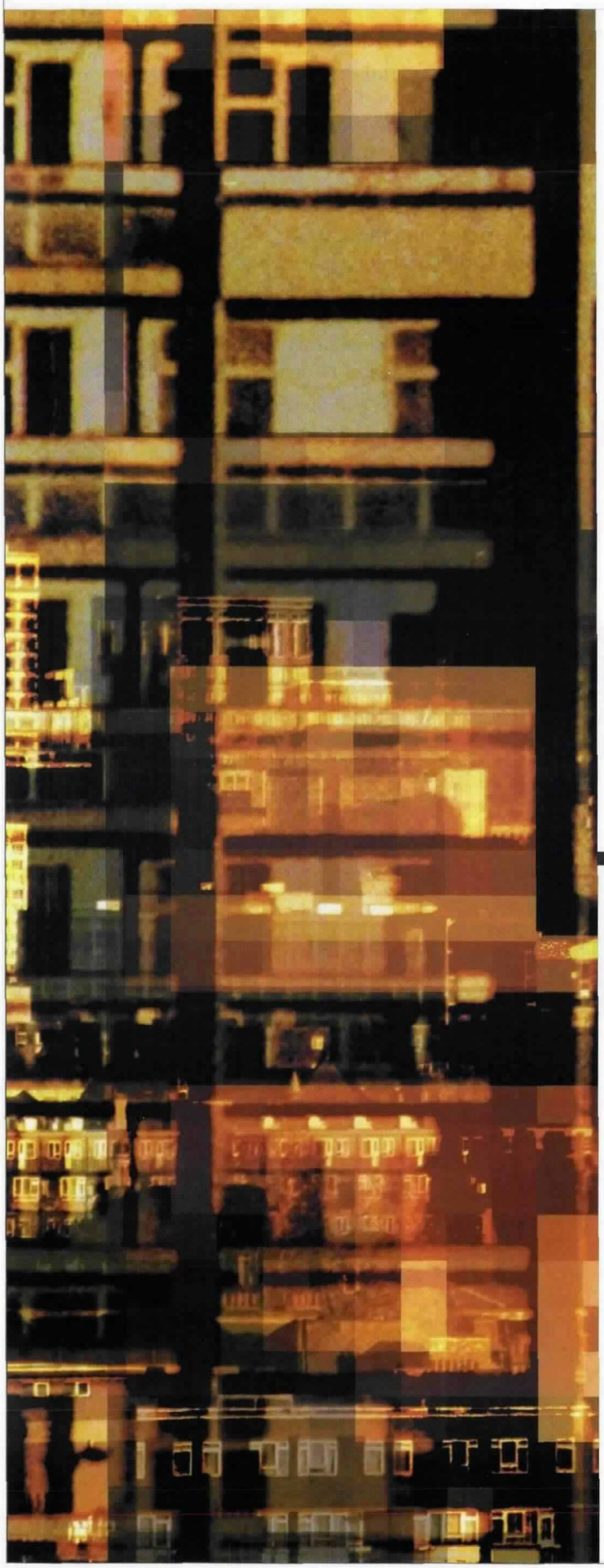
Walker, the former managing director of Citigroup, is steadfast in her support of the standard and has taken on the challenge of seeing it widely adopted in the private sector. Since the commission issued its recommendations last summer, Walker has championed the standard to various business groups.

"Eighty-five percent of critical infrastructure in the U.S. is controlled by the private sector, the vast majority of employees in America work in the private sector, and future terrorist attacks will likely involve the private sector. Lessons learned on September 11 told us that companies were not prepared."

Walker, who was at the World Trade Center but not in any of the buildings during the attacks of September 11, witnessed two bomb attacks while working at the European Bank for Reconstruction and Development in London where she was U.S. alternate director.

Calling on businesses to adopt the standard, she described how the commission asked the American National Standards Institute to convene a wide range of public and private sector organizations to recommend a voluntary standard and NFPA 1600 was seen as the best available.

1. National Commission on Terrorist Attacks Upon the United States, The 9/11 Commission Report, W.W. Norton & Company, Inc., New York, NY, 2004.



and life safety systems can help to protect buildings and the occupants within. Physical and operational security measures such as fences, gates, lights, locks, and intrusion detection systems can help to deter criminal or terrorist activity. Plans for continuity of critical functions and essential operations at an off-site facility or by mutual aid agreement can help an organization fulfill its services even though an important facility is damaged or uninhabitable.

Effective response and recovery operations require sustained funding, trained and knowledgeable personnel, appropriate facilities, systems, equipment, and materials. As mentioned, the risk assessment process identifies hazards. The program manager must then assess resources needed to prepare for, respond to, or recover from damages caused by the threat. This gap analysis should identify shortfalls in response time or capability as well as any limitations such as cost or liability, so these gaps can be addressed-before an incident occurs. All necessary resources should be catalogued for easy retrieval, and access to them should be arranged in advance. Mutual aid agreements are an excellent means of acquiring or sharing resources, and these agreements must be properly executed in writing.

Every organization should have a plan that complies with applicable regulations and is consistent with the organization's mission, vision, management policy, and finances.

Every organization should have a plan that complies with applicable regulations and is consistent with the organization's mission, vision, management policy, and finances. At a minimum, every entity needs to have a mitigation plan that addresses short- and long-term mitigation strategies. Every facility should have an emergency operations plan that includes warning, evacuation, and sheltering plans to protect building occupants. Plans must be coordinated with public emergency services to ensure actions taken at the facility are consistent with those of fire and police incident commanders. Additional emergency operations plans can include firefighting, hazardous materials response, emergency medical treatment, search and rescue, and responses to bomb threats or chemical or biological agents.

All entities should also have a recovery plan that addresses continuity of business and recovery of build-

ings, systems, and equipment. The business continuity plan should identify critical functions, how quickly they must be recovered (recovery time objective), and operating strategies to maintain these critical functions until normal functionality is restored. The required impact analysis can help to identify recovery time objectives and provide justification for investment in mitigation or business continuity efforts.

Direction, Control, and Coordination

Response to, and recovery from, any disaster, large or small, requires the coordination of all resources both public and private. NFPA 1600 requires each entity to utilize an incident management system (IMS) and to develop procedures to implement it. The National Incident Management System (NIMS), published by the U.S. Department of Homeland Security in March, requires use of the Incident Command System in the public sector. Private organizations should consider aligning their incident management system to allow unifying command with public sector agencies that may respond to their facilities.

Communications and Warning

Every entity must be able to warn those who are at risk or potentially at risk from an emergency. At the very least, there must be systems, protocols, and processes for the emergency response team to instruct occupants to evacuate the building or shelter in place. Primary and backup means of alerting members of the emergency organization and notifying public emergency services should be established, tested, and maintained.

For a larger facility exposed to hazards that could result in significant consequences, notifying thousands of occupants, accounting for hundreds of evacuees, communicating with affected employees at home, and communicating between on-site responders requires multiple systems. These can include radios, telephones (including wireless, satellite and landline), pagers, internet notification systems, and call centers as well as sophisticated procedures to ensure that all the information is transmitted and logged.

Operations, Procedures, Logistics and Facilities

Organizations need to establish threat- and site-specific procedures for safeguarding building occupants and emergency responders as well as procedures for situation assessment, incident stabilization, conservation of property, and the prevention of environmental contamination. Procedures should also include damage assessment, recovery, and continuity of management or government.

Managing emergency incidents requires a variety of resources, including personnel, specialized expertise, facilities, equipment, supplies, and transportation, and NFPA 1600 requires implementation of a resource management system. Primary and backup emergency operations centers (EOC) are required to support the effort. An EOC should be properly located so it is least exposed to hazards on-site, but recognizing that the entire site may be rendered uninhabitable an off-site, backup EOC should be established. An emergency operations center need not be in a single physical location. Today, "virtual" EOCs connect personnel from multiple locations via computer and teleconference.

Training

Training everyone in an organization to respond effectively and safely to a disaster by increasing their awareness and honing their skills is critical. Members of emergency response and business continuity teams must learn their roles as defined in the plan and develop appropriate technical skills. Senior management must also understand their assigned roles and responsibilities.

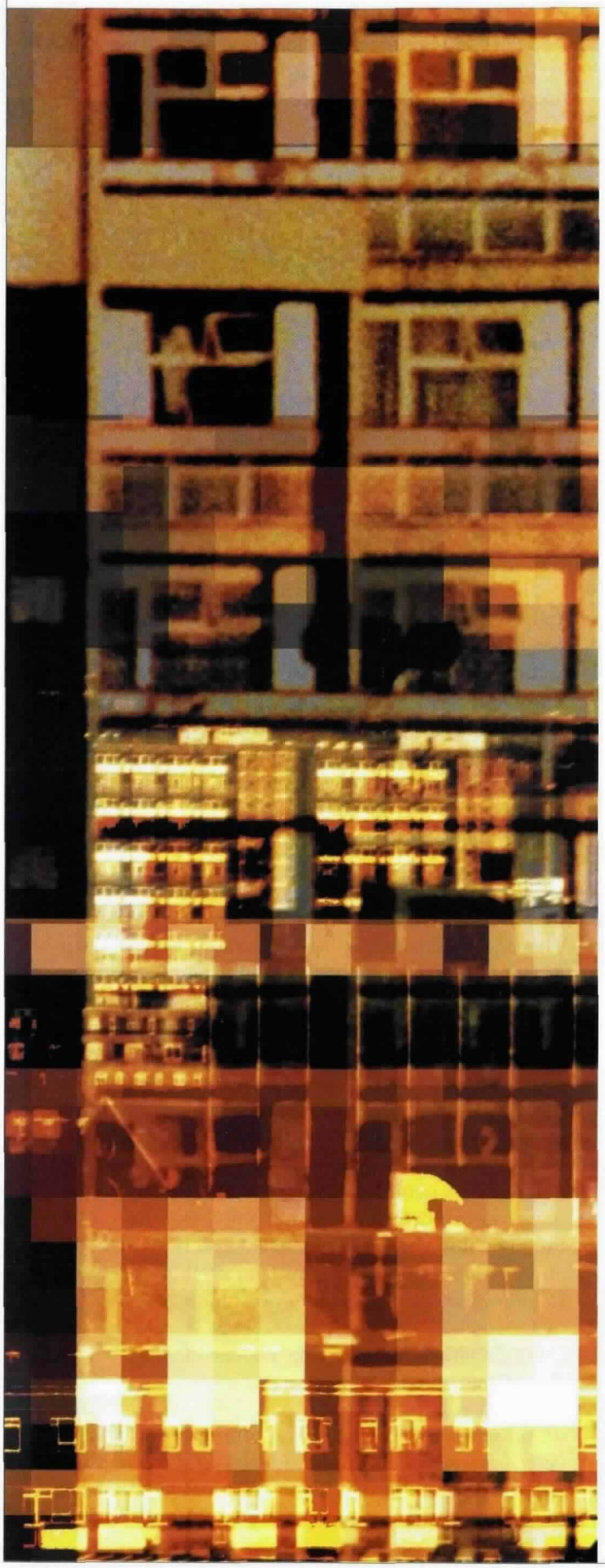
There are many regulatory requirements for training and exercising emergency plans. As a minimum, all employees must be trained on evacuation procedures, and many jurisdictions require partial or full building evacuation drills. As the scope and complexity of the program increases, the scope of training must increase likewise. Specialized teams-such as fire brigades, hazardous materials response teams, medical response teams, and search and rescue teams-require substantially more training in accordance with applicable regulations such as OSHA as well as NFPA standards.

Exercises, Evaluations, and Corrective Actions

The vulnerability of facilities, the hazards and criticality of operations, and the availability and capabilities of personnel change over time. So do the hazards that threaten them. Therefore, periodic review and auditing of emergency management and business continuity programs is essential to ensure they meet goals, objectives, changing needs, and current exposures. Periodic reviews, testing, post-incident reports, performance evaluations, and exercises will allow the emergency and business continuity managers to evaluate program effectiveness, determine people's ability to carry out the plan, and correct any deficiencies. Post-incident and exercise critiques present an excellent opportunity to identify areas that need improvement.

Crisis Communications, Public Education, and Information

When an emergency occurs, clear and effective communications to employees, the community, regulators, customers, suppliers, and other stakeholders is essential, as is education that increases everyone's awareness of their role in mitigation, response, and recovery. For



private organizations, crisis management and communications with stakeholders are crucial to protect brand, image, and reputation.

Finance and Administration

Every organization, large and small, public and private, needs financial accounting and administrative procedures to support the emergency management, business continuity, and recovery programs. Proper financial support is required to develop and implement the program. Management also must understand and commit the resources needed to sustain performance over time. Accounting and administrative procedures are needed during an incident to track costs, file claims, account for damages, seek reimburse for losses, and to comply with governance rules of the organization.

All organizations have an obligation to their constituents, be they residents of a political jurisdiction or occupants of a building, to provide a safe environment in the event of a disaster. NFPA 1600 is fast becoming the standard for a program that can do just that.

History of NFPA 1600

NFPA 1600 was first adopted by NFPA in 1995 as a recommended practice. In 2000, the document was significantly revised and issued as a standard. The 2004 edition contains updated terminology and has been reformatted to follow NFPA's Manual of Style; however, the elements of the standard remain unchanged. Additional explanatory information was included to show the relationship of NFPA 1600 to FEMA's CAR, and BCI & DRII Professional Practices. Additional informational resources were added to Annexes B, C, D, and E.

Future Development of NFPA 1600

The next edition of NFPA 1600 is scheduled for adoption in the fall of 2006 for publication in 2007, and the Technical Committee has been working for more than a year on additions and changes. Recommendations from ANSI's Homeland Security Standards Panel have been logged by the Secretary, NFPA Standards Council. An internal task group has presented more than 40 recommendations to the technical committee at its September meeting in Portland, Maine.

DONALD L. SCHMIDT is Senior Vice President in the with Risk Consulting practice of Marsh Inc. He also is a 10-year member of the NFPA Technical Committee on Emergency Management and Business Continuity, which is responsible for NFPA 1600. He is also a principal member of the Technical Committee on Pre-Incident Planning. He is the co-author of Business At Risk: How to Assess, Mitigate and Respond to Terrorist Threats, and Tools & Techniques of Risk Management and Insurance.

EACH DAY BLUEPRINTS ARE REVIEWED, WIRING IS INSPECTED, EQUIPMENT IS TESTED AND DANGER HAS ONE LESS PLACE TO HIDE.

At Underwriters Laboratories, we're proud to partner with you in your commitment to public safety, and we understand your responsibility requires you to leave no stone unturned. That's why our dedicated regulatory services staff offers technical services and support that include everything from online information to on-site field evaluations. This wide range of resources is available to assist your work in any built environment. For more than a century, UL and the integrity of the UL Mark have offered you something important when making compliance decisions: peace of mind.

UL Working for a safer world.

www.ul.com/regulators

Circle 002 on Reader Service Card

GIMME AN F!
GIMME A P!

WHAT'S THAT STAND FOR?

FIRE PROTECTION!

PHOTOGRAPHS: UNIVERSITY OF UTAH

THE UNIVERSITY OF UTAH, like many other campuses, have a fire prevention program that consists of prevention, preparedness, response and recovery. By Mike Halligan

HOW DO YOU PROTECT from fire a university campus with 338 buildings housing high-tech research, a medical school, two hospitals, and classrooms for more than 27,000 students spread over 13 million square feet (1.2 million square meters)? To complicate the task, add a 46,000-seat stadium used for football, soccer, concerts, the 2002 Winter Olympic ceremonies, and other special events.

At the University of Utah, where the daytime population is 75,000, the answer is a fire prevention program that employs six full-time personnel and five part-timers. Most four-year schools across the United States are so concerned about the impact a fire can have on their students, staff, and research that they have similar fire prevention departments focusing specifically on reducing the risks of fire on campus.

The University of Utah Fire Prevention Program is a division of the Department of Environmental Health and Safety, allowing the program to draw on the talents of the fire prevention staff and experts in the fields of laboratory and industrial safety. As on many other campuses, the program consists of four interrelated components: prevention, preparedness, response, and recovery. Fortunately, day-to-day activities are focused on prevention and preparedness activities. The occasional fire alarm–there were 203 unwarranted alarms in the 2003-2004 school year–disrupts prevention activities and shifts part of the fire prevention staff into a response mode. Rarely is there a need to engage in fire recovery efforts. In the 2003 academic year, there were only 12 fires, and most were confined to trash containers, stoves, and cars.

The low incidence of fire is a good indicator of the time and effort the university places on prevention and preparedness to minimize its exposure in the areas of life and property loss, and damage to prestige, student recruitment, the environment, business continuity, and grant income.

As the associate director and fire marshal of the Fire Prevention Program, I am responsible for its overall management and for conducting specific inspections, which usually require more than a basic understanding of applicable codes. For example, laboratory occupancies require an in-depth knowledge of many codes and standards, including NFPA 45, *Fire Protection for Laboratories Using Chemicals*. Entry-level fire prevention staff rarely inspect university labs. Generally, specialists experienced in laboratory safety first visit labs, consulting with the fire marshal for an interpretation of the codes' laboratory requirements if specific questions arise.

The fire marshal also inspects assembly occupancies and all special events on campus, conducts state-mandated fire safety inspections, and issues occupancy permits for new and renovated buildings.

In addition, the campus fire marshal, who is also a deputy state fire marshal and certified plans examiner, is responsible for reviewing all plans for new buildings and remodeling projects. The university normally conducts more than $350 million in construction annually. Projects range from new buildings to small remodels of very high-tech spaces.

Often, the construction requires careful review of alternative approaches to life safety because of the buildings' age and historical significance.

Often, the construction requires careful review of alternative approaches to life safety because of the buildings' age and historical significance. One of the greatest challenges facing the university is fitting modern high-tech research labs into 100-year-old facilities. Campus buildings are rarely completely gutted and retrofitted. More often, a series of remodeling projects takes place in a structure over several years, requiring a phased approach for fire and life safety improvements. Some research buildings average a complete remodel in phases every seven or eight years, and some of the medical research and health-care buildings are completely renovated every five to six years as researchers and new technologies move in or out of space. While the initial project in a building may identify an overall plan for upgrades to fire protection features, the implementation may span two or three code cycles and require periodic reviews of the original life-safety improvement plan.

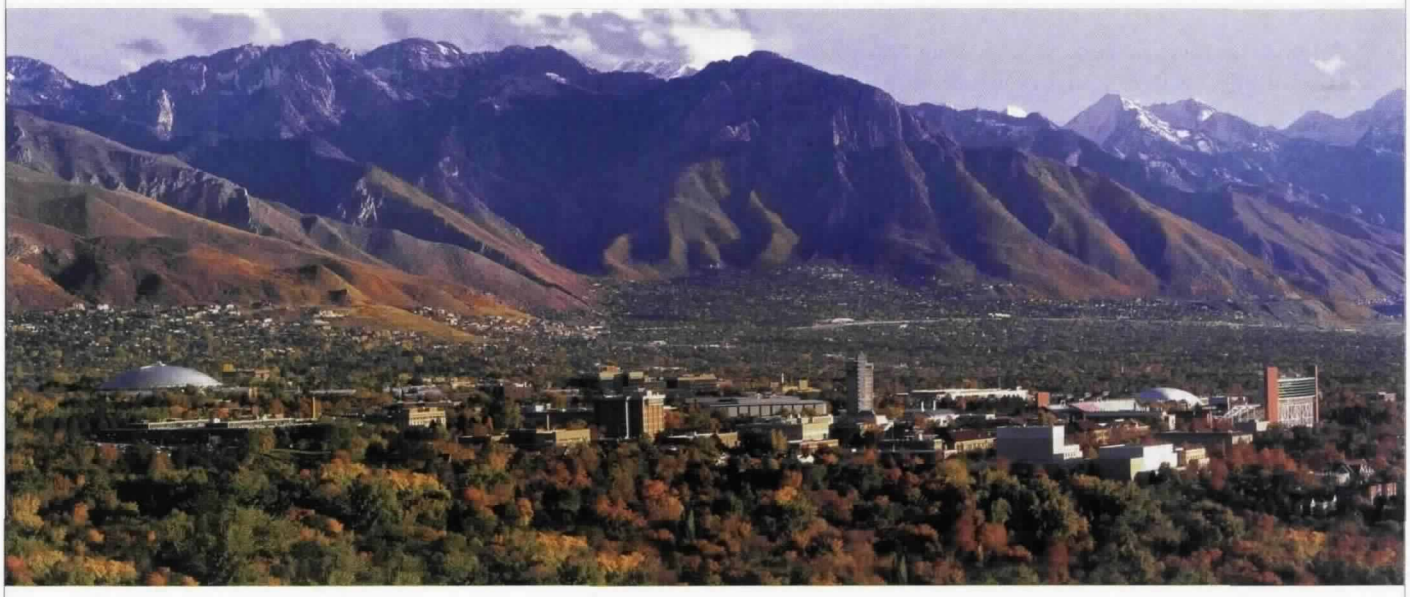
Plan review

To track current conditions in buildings and guide a life-safety improvement plan for the campus, half the full-time fire prevention positions are responsible for plan review and building audits. One full-time position at the health science center is responsible for reviewing plans, inspecting construction, and issuing occupancy permits, and two individuals provide the majority of plan review, construction review, and occupancy permits at the main Salt Lake City campus. Also on the main campus, the fire marshal is responsible for reviewing architectural drawings and performance-based designs, while the senior fire prevention specialist reviews fire alarm system submittals for compliance with NFPA 72, *National Fire Alarm Code®*, and sprinkler system designs for compliance with NFPA 13, *Installation of Sprinkler Systems*. In addition to internal reviews, campus fire sprinkler projects are reviewed by a Utah state fire marshal's approved review agency.

The University of Utah student campus housing.

The university's design standards actually go beyond the requirements of NFPA 72 and NFPA 13. For example, campus standards require use of Schedule 40 pipe in all research facilities, even though the code may permit thinner Schedule 10 pipe, because these systems are frequently altered as portions of buildings are renovated and Schedule 40 pipe is very durable.

Campus standards also require that all fire alarm systems installed be addressable. While zoned systems may be permitted, the Fire Prevention Program's campus



The campus of the University of Utah .

clients want to pinpoint exactly where an alarm is initiating for a rapid response. And an addressable system allows maintenance and contractor teams to program out single points instead of a full-zoned floor, something important given the constant remodeling of some of the campus buildings. This reduces the need for a fire watch on occupied floors and allows for rapid detection and notification of the building occupants.

One unique aspect of the university's plan review process is that the design team includes fire prevention staff, who are involved from the initial development of a project, allowing them to make comments on the impact of proposed uses. As the architectural team moves into schematic design, the fire prevention team can review early solutions, again commenting on code compliance and providing alternatives that may reduce project costs. The team reviews drawings at the design development stage and at the final design stage.

Historically, design and fire prevention teams have struggled on projects where fire prevention has not been considered in the early stages of design or when changes are made during construction. The university recently closed this loophole, and projects can no longer be bid before the campus fire marshal and building official sign off on the final drawings. No change orders are issued during construction until the fire marshal and building official reviews and signs off on them.

Over the past two to three years, the quantity of performance-based designs has increased significantly, forcing the campus building official and fire marshal to quickly develop a working knowledge of the performance-based design process. In the last year aloe, three projects used a performance-based approach, and even the simplest project has some performance-based design elements.

For example, a performance-based design used in the renovation of the main library allowed the egress system to use a five-story monumental stairway open to the entire building. Smoke modeling determined that, based on expected fuel loads, the stairway would maintain a tenable environment long enough to allow visitors and staff to leave the building. In another campus building, a performance-based approach was used to reduce the need for a complete smoke evacuation system in an atrium. Louvers at the top of the atrium, coupled with horizontal sliding doors and smoke curtains, significantly reduce the air supply in the atrium. The third project used fire modeling to determine that, even though a new practice facility had no side-yard separations, as required by code, a fire in the facility or the building adjacent to it would have no impact on the building not involved in the fire.

Community and campus public relations

The fire prevention office also focuses on promoting fire safety among the on-campus population of students, staff, and researchers. We focus our efforts on building a relationship with all departments on campus and developing a fire prevention program based on the unique hazards represented in their environment.

This is particularly important with the university's research community, which does not receive traditional enforcement role well. By nature, researchers question rules, and successful researchers rarely think inside the proverbial "box." Telling a researcher the "code does not allow" them to do what they are doing is often met with great resistance. So, we decided to work our way on to the research team, where we can be seen as a resource to the research group.

PHOTOGRAPHS: UNIVERSITY OF UTAH

Another partnership success story concerns the university's Office of Residential Living, with which the Fire Prevention Program has a strong 25-year history, even though personnel have changed on both sides over the years. Management-level talks take place periodically so the program personnel can stay in touch with the housing staff's needs. Fire prevention staff review all housing units monthly to test alarm systems and to work directly with residents on fire safety. Minor problems, such as housekeeping issues, candle use, obstructed exits, disabled smoke alarms, or obstructed sprinklers, can be handled by the resident and the fire prevention staff. If problems continue, live-in floor staff work with the student to change his or her behavior.

During the weeks before housing is opened each fall, the fire prevention staff conduct a Fire Academy for Resident Advisors, where we spend a half-day talking to housing staff about fire safety. This program, based on a model developed by the Boulder, Colorado, Fire Department in cooperation with the housing program at University of Colorado at Boulder, consists of training resident advisors (RAs) on a series of fire prevention, preparedness, and response centers.

First, the RAs are taught about the typical types of campus housing fires and about fires that occurred on the campus and their affect. They then learn about the active and passive fire detection and suppression systems in the buildings in which they live and work. By the end of the discussion, they know why it is important to keep exits and corridors clear of combustible materials and how hold-open door devices, sprinklers, smoke alarms, and horn strobe units work.

Next up is fire extinguisher training. RAs are trained to activate the alarm, size up a fire quickly to decide whether they can extinguish it, and use proper extinguishing technique. The university requires that anyone choosing to use a fire extinguisher follow the buddy system. While one individual discharges the extinguisher, the second is directly behind him or her to ensure that a safe exit path is always available.

HIGHER-ED OFFICIALS SEEK TO END FIRE EXTINGUISHER VANDALISM

AT INSTITUTES OF HIGHER LEARNING student carelessness and vandalism can render extinguishers ineffective. Elimination of such potentially dangerous and life-threatening situations is the impetus that is leading many colleges and universities to install electronically monitored fire extinguishers in their residence halls.

These electronically monitored extinguishers, known as EN-Gauge fire extinguishers, constantly monitor for presence and check every 15 hours for pressure and obstruction to access. When an extinguisher is removed from its cradle, an alert is immediately sent to a monitoring station where safety officials can dispatch help in the event of a real fire emergency—or catch potential vandals in the act.

The electronically monitored fire extinguishers, manufactured by NFPA member MIJA, Inc. of Rockland, Massachusetts were installed in two freshman residence halls at the University of Utah, Salt Lake City in 2003. Since then, there have been no incidents of fire extinguisher vandalism in those two buildings. Mike Halligan, NFPA member and the associate director and fire marshal of the Fire Prevention Program at the University of Utah noted that a big deterrent to vandalism is that the students know someone is going to immediately investigate the situation when an extinguisher is removed from its proper location.

Suzanne Weaver, the assistant director of environmental health and safety at Virginia Commonwealth University (VCU) in Richmond, says that the instant removal notification aspect of the technology was the biggest draw for her, "The technology is great - no question." In addition to the instant removal notification, Weaver also noted the alert for obstruction to access was a side advantage.

"The idea that the extinguishers are monitored to deter kids from misusing them is key. And you can be sure we will communicate that information very clearly," says Barbara Spalding, associate director for campus fire safety at Wesleyan University in Middletown, Connecticut.

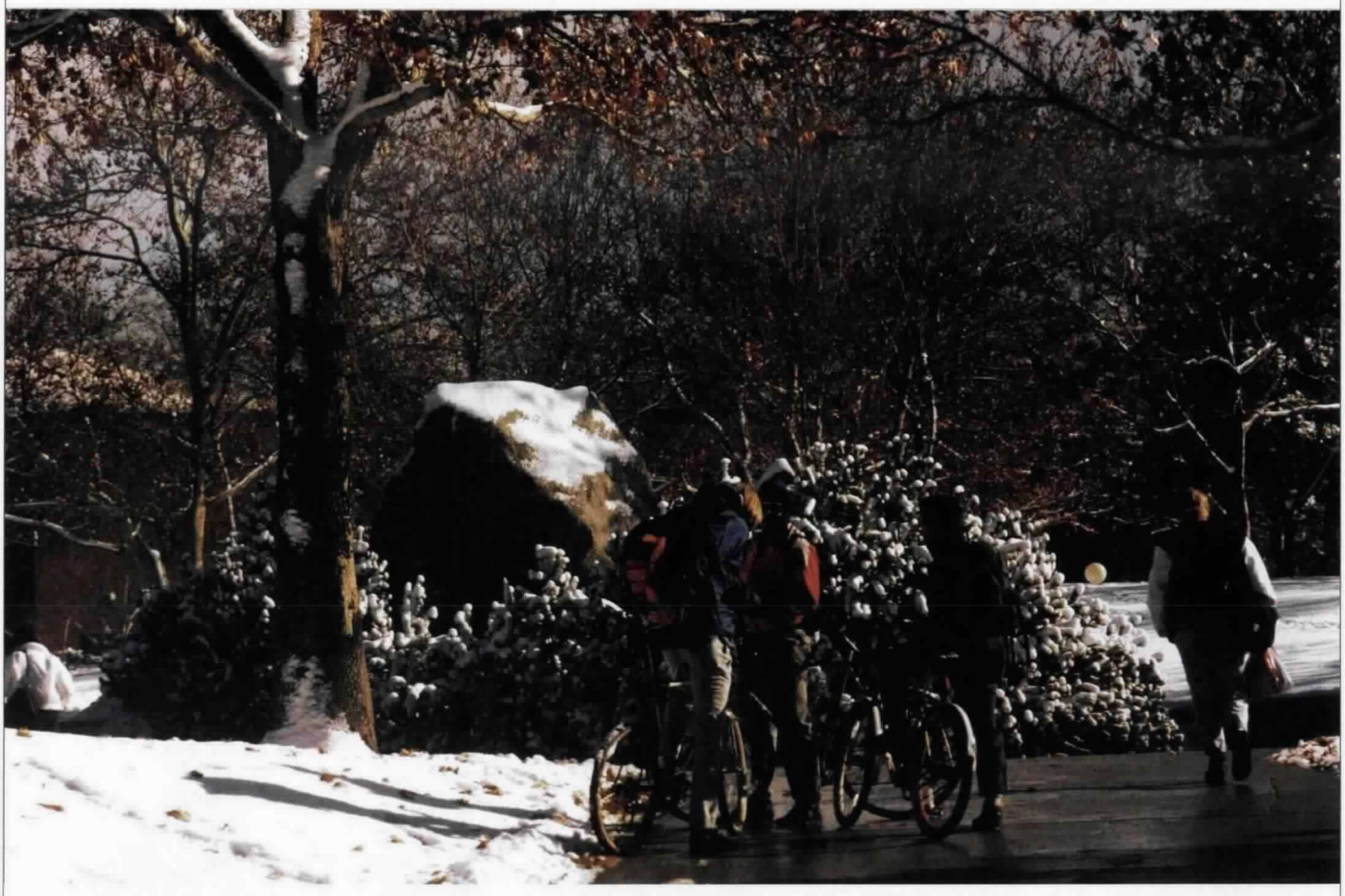
Wesleyan plans to renovate its residence hall complexes over the next three summers and about 65 electronically monitored extinguishers will be incorporated in those projects. A new freshman residence hall is currently under construction and the extinguishers are planned to be installed there also.

A wireless version of EN-Gauge is being installed in another Wesleyan residence hall within the next month or two for a total of 12 electronically monitored fire extinguishers. In addition, a building that currently has no extinguishers due to its history of extinguisher vandalism is being outfitted with 25 electronically monitored extinguishers.

Similar efforts are underway at VCU. Weaver is planning to install electronically monitored extinguishers in two residence halls currently under construction and due to open for occupancy in the spring of 2005. She is also working to get electronically monitored extinguishers built in to the design phase of every new building - residence hall or otherwise - going forward.

What do NFPA codes and standards say about electronically monitored extinguishers? The Portable Fire Extinguishers Technical Committee met in San Francisco in September to discuss proposed changes to the next edition of NFPA 10, *Portable Fire Extinguishers*. Among the items discussed was allowing electronic monitoring in lieu of 30-day physical inspections. A subcommittee was then formed to go over the details and finish the language. They were especially interested in making sure it was compatible with NFPA 72, *National Fire Alarm Code*®.

UNIVERSITY OF UTAH FIRE PROTECTION



Students at the University of Utah.

Fire drills are conducted at the beginning of each semester on weekday evenings when most residents are likely to be in their rooms to see how well the RAs trained their students. The drills are announced to the housing staff but not to the residents.

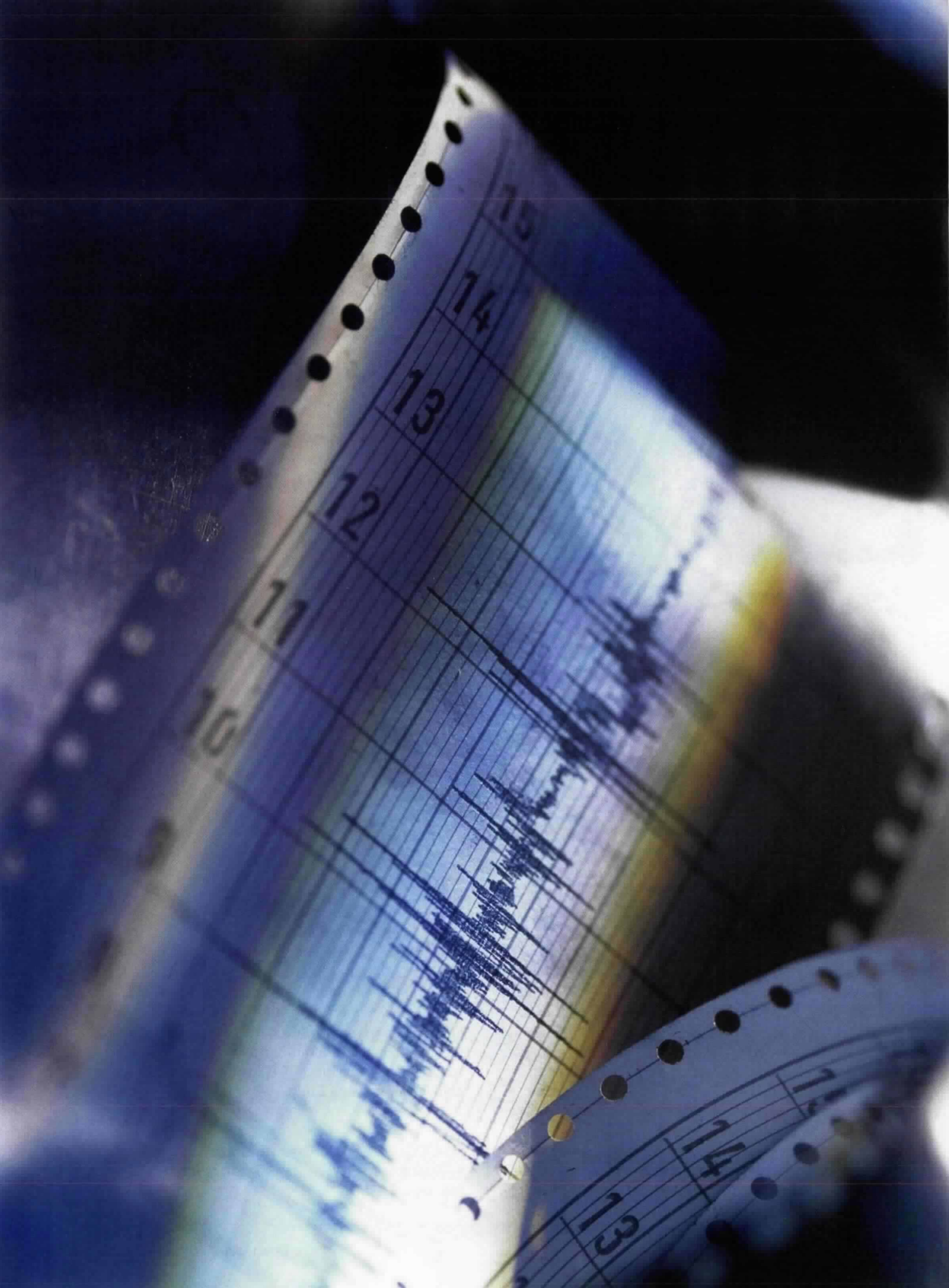
Once the alarm is activated, students are expected to evacuate the building within three minutes and report to a designated meeting place away from the building. Housing staff is in place to take a roll call and count how many people evacuated. The roll is never complete, since residents may be at work or in class, but the information will at least allow the staff to provide some information on who participated. Those who are not accounted for receive a follow-up letter explaining that there was a drill and reinforcing the message that they should evacuate when the alarm sounds.

Fire prevention staff also spend a few minutes discussing fire safety on campus, reminding students that they should evacuate any time an alarm goes off in any campus building and that they can call us any time they feel a campus safety issue is not being addressed.

We also supply articles to the campus newspaper promoting fire safety on campus and at home. As students start looking for off-campus housing in the spring, we run a story listing the questions they need to ask to determine how fire safe their off campus housing will be. During fire prevention week, we enlist student groups to write fire safety messages on sidewalks, particularly near all the on-campus fire hydrants. In 2004, the messages reminded them to change the batteries in their smoke alarms–smoke detectors–got batteries?–and to "cook your dinner, not your kitchen."

The campus program at the University of Utah is on the right track. We may use catchy phrases to promote fire prevention, but the result is a great relationship with the campus community. When problems are identified, those involved work together to find solutions. Our approach is paying off; fires are rare. Recently, our campus risk manager announced that our fire losses were well below the average. This is one time when being below average on a campus is a good thing.

MIKE HALLIGAN is an NFPA member and the associate director and fire marshal of the Fire Prevention Program at the University of Utah in Salt Lake City, Utah.



SEISMIC PROTECTION is spreading across the country and the way it's being done is changing. By **Roland J. Huggins, P.E.**

SPRINKLER shake-up

WHEN IT COMES TO providing seismic protection for sprinkler systems, historically, we have had either a "yes" or "no" statewide requirement. This is no longer the case with the current model building codes. Additionally, there are conflicts caused by the building codes on how to design the seismic protection.

Seismic events, or earthquakes, are common occurrences throughout the world. The Richter scale is one way to measure the size or magnitude of an earthquake. The Richter scale is a logarithmic base scale whereby an increase in one whole number represents a ten-fold increase in measured amplitude and a release of 31 times more energy. For instance, a 7.0 represents the discharge of 31 times more energy than a 6.0.

Magnitude is not the only variable dictating the ability to cause damage. The depth of the hypocenter (where the actual facture occurs verses epicenter, which is a vertical projection to the surface) also influences the surface motion. The shallower the event, the smaller the affected area, resulting in a greater potential surface motion.

The consequences of an earthquake are naturally tied to the construction features within the area. Criteria for the protection of the sprinkler system first appeared in NFPA 13, *Installation of Sprinkler Systems*, in the 1940s. As expected, changes to it have been made after the evaluation of facilities following major earthquakes. These evaluations have also shown that systems can be adequately protected but omission of only a few components can result in pipe damage. So, when in doubt, more is better.

Another event that has imposed recent significant change on NFPA 13 is realizing the need for better alignment with the National Earthquake Hazard Reduction Program (NEHRP) and the criteria of the American Society of Civil Engineers (ASCE) 7, *Minimum Design Loads for Buildings and Other Structures*. This is reflected by TIA 13: 02-1 published in 2003. It made extensive changes, particularly for the allowed loads on fasteners, and can be downloaded from www.nfpa.org.

The criteria of NFPA 13 define only how to protect a system. The local building code dictates when that protection is required. In the past, most areas with statewide codes would decide based upon the acceleration depicted by the Seismic Zone Maps, see Figure 1.

As shown, the intensity varies across the country and within individual states. At what level to require protection was left up to the individual state. Most of the country, though, being less than a zone 3 didn't require seismic protection. With the adoption of NFPA 5000™, *Building Construction and Safety Code*™, or the IBC, even relatively low accelerations such as Zone 1 can no longer be casually ignored.

PHOTOGRAPH: CORBIS

When Protected

NFPA 5000 states under Section 35.10 Earthquake Loads that all building, and portions thereof, shall be designed to resist the effects of earthquake motions. The IBC has the same requirement.

You then have exceptions when protection isn't required for the building or just the system therein. As such, you have to prove whether protection is allowed to be excluded for each building. If the acceleration is very low, (less than 0.15 g for the short period) it is a simple yes/no issue. Otherwise, there are multiple site-specific variables that influence the evaluation. This leads to the possibility that two adjacent buildings of the same construction type can differ with only one of them requiring protection. It's also possible within a building being protected, that one mechanical system requires protection whereas another may not.

The determination on whether protection is required is the responsibility of the A/E team designing the building.This is clearly identified by NFPA 5000: 35.4.2.5 - Earthquake Design Data, which states that the following eight items shall be shown regardless of whether seismic loads govern the lateral design.The IBC similarly calls for 10 items in Section 1603.1.5.

The eight items in NFPA 5000 are:

1) Mapped maximum spectral response acceleration,
2) Site class,
3) Design spectral response acceleration,
4) Seismic use group and occupancy category,
5) Seismic importance factor,
6) Seismic design category,
7) Seismic force resisting system, and
8) Analysis procedure.

In addressing items 7 and 8, simply referencing the codes in defining how protection is to be provided is inadequate as discussed hereafter. This information is needed by the building official to review the building plans and for the contractors to bid the job and develop shop drawings. Contractors also need to know these requirements since the building plans often don't have the data or needed guidance and the contractors inherit the responsibility.

The process of determining if protection is required is handled well by both model codes. They're consistent since both model codes reference ASCE 7. NFPA 5000 shows this information in less than half a page by identifying each of the above eight items with their applicable sections of ASCE 7. The IBC (2000 edition) covers these items by extracting 25 pages of information.

Having this data within the code is preferable but it is covered in different sections and requires a lot of jumping around. One should have ASCE 7 on-hand since it's extensively referenced. In the IBC (2003 edition), the material was condensed and replaced with references to sections of ASCE 7. The application of protection to systems within the building is cleaner in the IBC since it directly addresses it in Section 1621. NFPA 5000 also addresses systems in Section 35.10.1 by stating all buildings "and portions thereof" and a general reference to Section 9 of ACSE 7. Within Section 9, there are criteria for systems.

The required level of seismic protection is assigned based upon the seismic design category of the building. The possible categories are A through F, with A being the least demanding. There are several steps required to determine the design category. Actually, there are two evaluations based on duration. One is the short period response for 0.2 seconds (designated by a lower case "s" such as Ss for spectral response, short) and the other is the 1.0-second period (designated by a "1"). You determine separate design categories, following the same steps for both durations, then use the more demanding category. To simplify matters, only the short duration is discussed in this article.

Design Process

The first step in determining the design category is to determine the mapped maximum considered earthquake spectral response acceleration (Ss) for the building site. You can use the Figures in ASCE 7 (which resemble the NFPA 13 zone maps but show the acceleration contour boundaries across the country) but in areas with close boundaries, it's hard to accurately identify the applicable acceleration. You can also use software developed by the United States Geological Survey that identifies acceleration by zip code.

The unit of measurement for acceleration is "g," such as 0.15 g. It's a percentage of the acceleration caused by gravity, which is 32.2 ft/s2 so a difference of 0.2 g is much larger than it sounds. The second step is to determine the Site Class, which is a function of the type of soil and how it is expected to fare during an earthquake. It is also assigned letters, using A through F with A (hard rock) being the least affected and F (such as peats or very high plasticity clays) being the most vulnerable to potential failure or collapse. If no information is available, you default (with approval of the building official) to a class D (a relatively stiff soil profile).

The third step is to determine the Site Coefficients (Fa). It is a number between 0.8 and 2.5 and is picked from a table based on site class and spectral acceleration. For instance a site class A at Ss $<$ 0.25 has a coefficient of 0.8 but at a site class E, the same Ss will result in a coefficient of 2.5. This coefficient is then used for the fourth step of determining the Design Spectral Response Accelerations (SD) = Ss x Fa x 2/3. Site class significantly affects whether or not one must provide protection. For instance, with the same Ss, the SD is 0.133 for site class A and 0.417 for site class E.

The fifth step is to determine the Seismic Use Group.

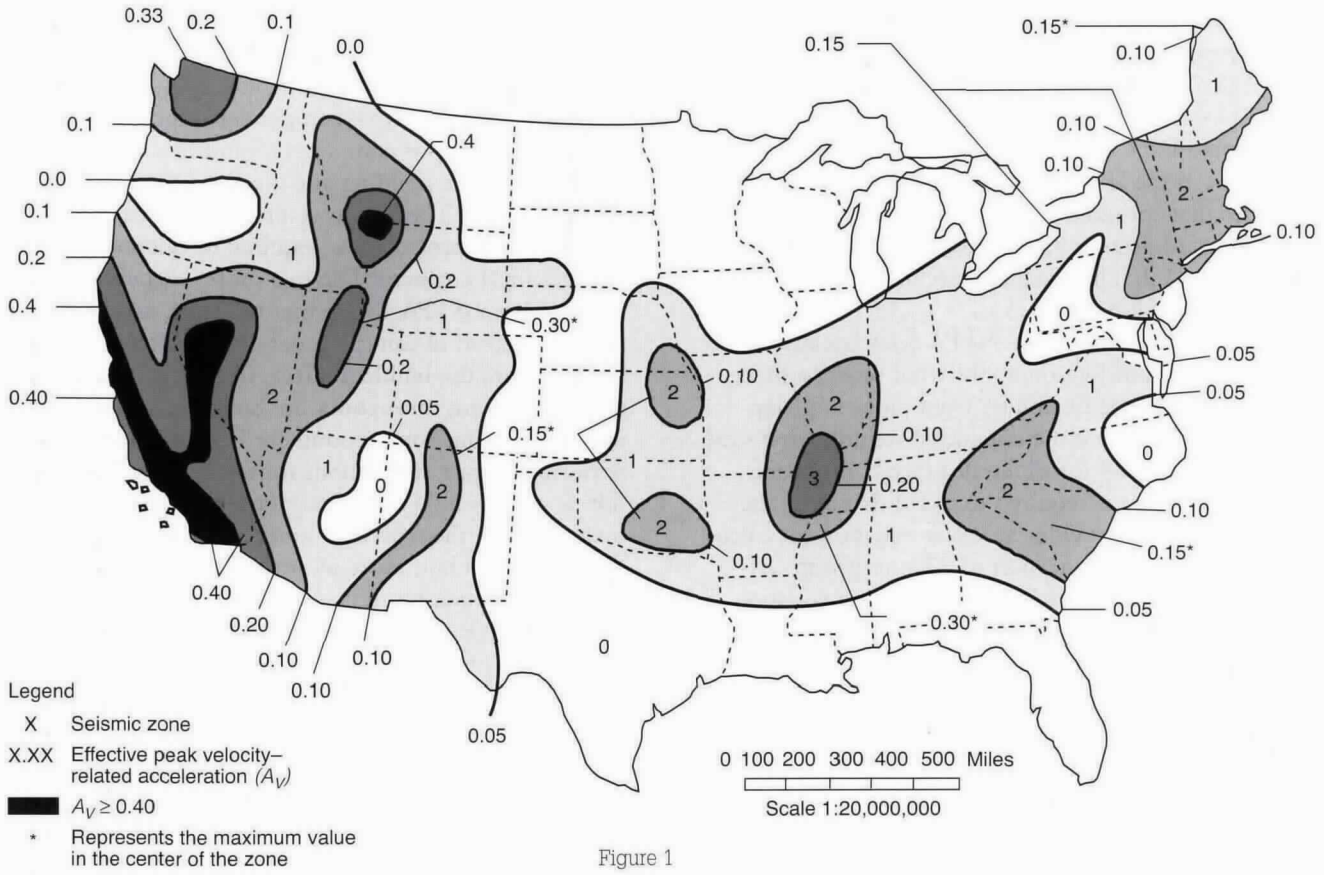


Figure 1

This category focuses on whether the facility could either present a hazard or provide needed services to the community following an earthquake. It's designated as category I, II or III. The IBC has four Use Group categories for other loads such as wind but ASCE 7 combines categories I and II creating just three seismic categories. You are now able do the sixth step and define the seismic design category. It is selected from a table and is based upon the SD (presented as four ranges of acceleration) and the seismic use group. For instance, a Use Group I at an SDs of 0.16g is an A while the same facility at an acceleration of 0.51g is a D.

The seventh and final step is to determine if protection is required for the sprinkler system. ASCE 7, thus NFPA 5000 and IBC, provides two exceptions. The first one is for a very low mapped maximum considered earthquake spectral response acceleration. When Ss is no more than 0.15g (0.04g for S1), no protection is required. The second one is a low design category of A or B. A third exception is offered by IBC when there is a low design acceleration not exceeding 0.167g for SDs or 0.067g for SD1. This exception allows a higher mapped acceleration than the 0.15g exception with site class D equaling an Ss of 0.157g and site class A an Ss of 0.313g.

As an example of the process, a hospital in Monroe, Louisiana, being in Zone 1 and very close to the Zone 0 boundary, would normally not be considered for protection. It's a seismic use group III (being important to the recovery activities) and has a short duration mapped maximum acceleration of 0.189g. This exceeds the exemption value so continue the evaluation.

Let's say it was determined by the civil engineer to be a site class C resulting in a design acceleration of 0.1512g.

This value is less than the SDs exemption threshold of 0.167g; therefore, seismic protection is not required. But, if the site class had simply been assigned the default value of D, the resulting design acceleration would be 0.2016g exceeding the exemption limit. This site class would also have resulted in a Seismic Design Category of C and protection would be required.

Application Problem

So, you have to provide protection and intend to apply NFPA 13, which we've always done. Unfortunately, it's no longer so simple. The problem is that although NFPA 5000 and IBC (2000 edition) via the ASCE 7 Section 9.6.3.11.2 allow the use of NFPA 13, it requires you to verify that the force and displacement exceeds that of the code. Actually, 2000 edition of the IBC requires the force calculated by NFPA 13 to be at least 1.4 that calculated by the IBC. The1.4 multiplier was deleted in the 2003 edition.

ILLUSTRATION: NFPA

Comparing the two forces is straightforward, but how do you prove equivalent deflection when this issue is not explicitly defined in the code or discussed in any NFPA 13 criteria?

One would hope it would get better with the newer editions but in the IBC, it got worse. The 2003 edition now states that sprinkler protection must meet the requirements of Section 9.6 of ASCE 7 EXCLUDING Section 9.6.3.11.2. This excluded section is the one that allows the use of NFPA 13.

The reason we can't ignore NFPA 13 is because it provides all the information about what pipes to brace and where to provide flexibility, what pipes to group together in determining the applicable weight, what's the allowed load capacity for different brace components, and where restraint is required to avoid damage. The building code only provides an exact equation for calculating force (with no indication of what to group together to determine weight) and part of an equation for deflection. Therefore, this leaves us with applying NFPA 13 but needing to determine whether to use its calculated force with a standard force factor of 0.5, assigning a higher force factor or using the force calculated by the codes.

There's also the issue of deflection. We are simply told the seismic relative displacement is equal to the deflection at level A as determined by elastic analysis minus the deflection at level B as determined by elastic analysis. So, that leaves us comparing something for the code provided by others with something not explicitly discussed in NFPA 13. In most worlds, using this as a basis for determining equivalency will not produce a favorable outcome. Keep in mind if conducting a comparison between levels A and B, one is looking at a vertical difference. NFPA 13 addresses deflection between vertical locations by requiring flexible couplings. For example, each floor penetration requires two flexible couplings. With each of them providing 1.5 degrees of deflection, a significant amount of movement can occur without damaging the pipe. It's worth noting that there is nothing in the codes restricting movement on the same horizontal plane but it is addressed by NFPA 13.

Resolving these issues is the responsibility of the A/E in defining the Seismic Force Resisting System and the Analysis Procedure required by the codes. As discussed, a simple statement of providing protection in accordance with the building code provides no guidance. The only reasonable resolution is to apply NFPA 13 criteria but the conflicts with the code's reference to NFPA 13 must first be addressed and what process for determining the applied force must be identified. Applying the force determined by the codes is reasonable.

The force is calculated by equation:

$$F_p = \frac{0.4 a_p S_{DS} W_p}{R_p / I_p}\left(1 + 2\left(\frac{z}{h}\right)\right)$$

Although there are several variables, this equation is straightforward. The variables that are constants and obtained from tables in the code are: ap = component amplification factor, Rp= component response modification factor, and Ip = component importance factor. The h is height of the building and z is the height of the location of interest. The SDs was already calculated in determining if protection is required or obtained from the structural engineer. The two most outstanding differences from NFPA 13 are that the exact acceleration is applied, instead of using a general force factor, and the height within the building affects the force, instead of using a constant throughout the building. It's worth saying that the equation accounts for height if one elects to perform separate calculations for every floor. My question is why wouldn't the designer take a conservative maximum for the whole building and reduce not only their workload but, more importantly, the chance for error. This would be similar to following the industry's practice of using a single remote area for the hydraulic calculations unless there's a reason for a second calculation. For seismic, it would be a significant change in weight or elevation. Otherwise, using a single calculated force would present little difference in construction cost.

There is a third difference in that the building codes also dictate that the calculated force shall not be less than a separately calculated minimum force nor required to exceed a separately calculated maximum force. These equations, based on some of the variables from the base equation for force but with different constants, are:

Fp min $F_p = 0.3 S_{DS} I_p W_p$ *and* Fp max $F_p = 1.6 S_{DS} I_p W_p$

In conclusion, why hasn't this conflict been a problem? I suspect it's because the building codes are used only by the building officials while reviewing building plans. These plans typically just say sprinklers to be provided. The sprinkler shop drawings are then later reviewed by the authority having jurisdiction (AHJ) typically applying only NFPA 13. Both have been happy with their individual criteria and the conflict has not really been noticed. So why would a representative for contractors be highlighting this issue? Because, until the conflicts of the building codes and ASCE 7 with NFPA 13 are resolved, contractors need to be aware before bidding on a project whether the A/E teams have addressed these issues and AHJs need to be aware of them in order to define reasonable solutions for their communities. The bottom line is that after the sprinkler system is installed is a very ugly time for a contractor to be retroactively addressing seismic protection.

ROLAND HUGGINS, P.E., is Vice President of engineering for the American Fire Sprinkler Association.

NFPA World Safety conference & exposition®

Las Vegas 2005

Mandalay Bay Convention Center
Las Vegas, Nevada

Pre-Conference Seminars: June 4-5, 2005
Education Sessions: June 6-8, 2005
Exposition: June 6-8, 2005
Technical Committee Report Session: June 9-10, 2005

Beginning this June, the World Safety Conference & Exposition and the Fall Education Conference will merge into one annual meeting. You benefit from:

- Increased attendance for even better networking opportunities
- More education sessions than ever before
- New educational formats including symposia, roundtables and panel discussions

NEW! *Hydrogen Safety Symposium and Tunnel Fixed Fire Suppression Systems Workshop*

www.nfpa.org/meetings
for detailed conference information and to register.

NFPA®

CONFERENCE TRACKS:

- Premises Security
- Codes & Standards
- Disaster Management/Business Continuity
- Building & Life Safety
- Detection & Suppression
- Fire & Emergency Response
- Business Management
- necforum
- Public Education
- Research

THE EXPOSITION:

- More than 250 industry-leading exhibitors
- Solutions to help you save time and money
- The most up-to-date, code compliant technologies, products and services
- Ask the NFPA Experts
- An Exhibitor Presentation Theater
- Food, fun & free gifts

For a current list of exhibitors log onto **www.nfpa.org/meetings**.

12 PRE-CONFERENCE SEMINARS:

- Nationally recognized instructors
- In-depth coverage of the codes
- Keeps you up-to-date and in compliance
- Helps improve job performance

TECHNICAL COMMITTEE REPORT SESSION:

Among the documents being considered at this conference are:

- NFPA 101, Life Safety Code®
- NFPA 1, Uniform Fire Code™
- NFPA 5000®, Building Construction and Safety Code®

SECTIONNEWS

Stay informed of critical issues in your industry! In these pages, you'll find news and information affecting your industry and your career.

Architects, Engineers, and Building Officials

WEB SITE: http://www.nfpa.org/aebo
CHAIR: John Kampmeyer, Triad Protection Engineering Corp.

HOT ISSUES

Beefing Up the Web Site

At the section meeting on November 14, section members discussed several key issues, among them the section Web site. Section leaders and NFPA staff have agreed to keep the site current and informative by gathering information from and for section members. We've also begun adding new features that will allow us to communicate with each other. We'll announce these features in "Section News" and email promotions, so those of you who haven't given us your email addresses are urged to do so. As always, we encourage you to submit news and information you would like to share with the section.

News and Notes

The AEBO Board met at the NFPA Fall Education Conference in Miami to review possible program for the 2005 World Safety Conference and Exposition™ in Las Vegas next June. Board members gave 10 programs priority for the meeting.

The AEBO Board consists of three architects, three engineers, and three building officials elected to three-year terms. One board member from each category is elected every year. If you are interested in serving on the Board, contact Nominating Committee Chair Jim Peterkin at jspeterkin@hlmdesign.com and include a short resume of your qualifications.

As of the next issue of the section's online newsletter, you will receive an email from NFPA providing a direct link, so you can keep with the clicking on the mouse.

Finally, AEBO membership had climbed to 4,246 as of October.

HOW TO REACH US: Allan Fraser, Executive Secretary, (617) 984-7411, afraser@nfpa.org

Aviation

WEB SITE: http://www.nfpa.org/aviation
CHAIR: Dennis Kennedy, P.E., Tyco Suppression Systems

HOT ISSUES

Aviation Section Meeting

At the Aviation Section business meeting in November, several important items were presented, the first of which was the election of officers. Dennis Kennedy of Tyco Suppression Systems was elected chair, Nathanial Addleman of the RJA Group became vice-chair, and Michael Kemmis of Qantas Airways is secretary. Brian Boucher of Air Canada, Joseph Simone of the U.S. Navy, Abdullah Thani of Singapore Aviation Academy, Danny Pierce of Los Angeles World Airports, and Fred Walker of the U.S. Air Force were elected directors. Joseph Scheffey remains ex officio.

Also discussed were section activities, including information that appears in *NFPA Journal*, *ARFF News*, and on the section Web site. The section uses these outlets to give section members information on topics of interest. Most of the articles appearing in *NFPA Journal* are written by Section Secretary Mark Conroy, who reports on conferences section Board meetings, and the activities of NFPA's aviation committees.

Mark also writes a regular column for *ARFF News*, the official newsletter of the ARFF Working Group, an independent organization made up of fire chiefs, ARFF firefighters, and manufacturers of ARFF equipment. NFPA publishes the newsletter for the ARFF Working Group. *ARFF News* gives us another opportunity to get the word out on aviation safety and the section's activities. If you have an article you would like considered for a future issue, let Chairman Kennedy or Mark know.

The section will begin using the Web site more frequently during the coming months to post information on events of interest to members and links to other sites dealing with common safety concerns at airports.

Also discussed was the upcoming Singapore conference, the section's third joint venture with the Singapore Aviation Academy. The section Board would like to continue supporting the conference, as well as the NFPA World Safety Conference and Exposition™ (WSCE™). In the past, the section sponsored an afternoon or full day of presentations. Now, however, conference presentations will be rolled into the training track format. Although we may lose a bit of our identity as a section, this new format will help attendees follow a specific track, and we therefore support the change.

The presentation proposal deadline for next June's WSCE has already passed. If you feel something should be on the agenda, however, let a Board member know so that he or she can push to get it on the program. Meeting attendees were also asked to network and help find good speakers for future programs.

HOW TO REACH US: Mark Conroy, Executive Secretary, (617) 984-7410, mconroy@nfpa.org

Building Fire Safety Systems

WEB SITE: http://www.nfpa.org/bfss
CHAIR: Neal Krantz, LCV Technologies, Inc.

HOT ISSUES

Evolving Backflow Prevention

by JACK POOLE, P.E., POOLE AND ASSOCIATES
ROLAND HUGGINS, P.E., AFSA

There has been a long-standing conflict regarding the use of backflow preventers on sprinkler systems due to many questioning if they are really needed but mainly due to the fire protection problems they can create. A study by the AWWA Research Foundation (AWWARF) called "Impact of Wet-Pipe Fire Sprinkler Systems on Drinking Water Quality" (but referred to by multiple names such as the Boyle, Poole, or AWWARF study) clearly indicated that backflow prevention is required. What is particularly noteworthy from this report,

Use these Reader Service cards to receive FREE information on products and services valuable to you and your business at no cost or obligation. Complete the required information, then circle the numbers that correspond to the numbers on the advertisements or editorial listings in this issue.

Visit our website today!

Visit www.nfpa.org/productinfo, fax to 1-888-847-6035, or mail this postpaid card today.

SEND FOR FREE INFORMATION TODAY!

SEND FOR FREE INFORMATION - JANUARY/FEBRUARY 2005 NFPA JOURNAL

Please print. Mail by May 1, 2005

NAME _____

TITLE _____ COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

E-MAIL _____ PHONE ( ) _____

Please send me information about the following circled items:

001	002	003	004	005	006	007	008	009
010	011	012	013	014	015	016	017	018
019	020	021	022	023	024	025	026	027
028	029	030	031	032	033	034	035	036
037	038	039	040	041	042	043	044	045
046	047	048	049	050	051	052	053	054
055	056	057	058	059	060	061	062	063
064	065	066	067	068	069	070	071	072
073	074	075	076	077	078	079	080	081
082	083	084	085	086	087	088	089	090
091	092	093	094	095	096	097	098	099
100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117
118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153
154	155	156	157	158	159	160	161	162

Please send me information on all products or services advertised or featured in this issue in the categories I have circled below:

801 Alarm and signaling systems
802 Building products, structural and electrical
803 Detection systems and accessories
804 Education
805 Fire suppression systems and accessories
806 Sprinkler systems and accessories
807 Testing

Job Title:
- ☐ A Architect, Engineer, Consultant, Contractor
- ☐ B Owner, President, Manager, Administrator
- ☐ C Fire Chief, Other Fire Service
- ☐ D Facilities Safety Officer
- ☐ E Inspector, Building Official, Fire Marshal
- ☐ F Loss Control, Risk Manager
- ☐ G Other:_____

Reason for Inquiry:
- ☐ H Immediate Purchase
- ☐ I Future Project

Type of Organization:
- ☐ J Architecture, Engineering, Contracting
- ☐ K Government
- ☐ L Fire Service, Public and Private
- ☐ M Industrial Firm (Factory, Warehouse)
- ☐ N Commercial Firm (Office, Retail, Lodging, Restaurant)
- ☐ O Institutional (Health Care, Education, Detention, Museums)
- ☐ P Electrical Services, Installation
- ☐ Q Insurance, Risk Management
- ☐ R Utilities
- ☐ S Other_____

Purchasing Authority:
- ☐ T Recommend
- ☐ U Specify
- ☐ V Approve

www.nfpa.org/productinfo

SEND FOR FREE INFORMATION - JANUARY/FEBRUARY 2005 NFPA JOURNAL

Please print. Mail by May 1, 2005

NAME _____

TITLE _____ COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

E-MAIL _____ PHONE ( ) _____

Please send me information about the following circled items:

001	002	003	004	005	006	007	008	009
010	011	012	013	014	015	016	017	018
019	020	021	022	023	024	025	026	027
028	029	030	031	032	033	034	035	036
037	038	039	040	041	042	043	044	045
046	047	048	049	050	051	052	053	054
055	056	057	058	059	060	061	062	063
064	065	066	067	068	069	070	071	072
073	074	075	076	077	078	079	080	081
082	083	084	085	086	087	088	089	090
091	092	093	094	095	096	097	098	099
100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117
118	119	120	121	122	123	124	125	126
127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152	153
154	155	156	157	158	159	160	161	162

Please send me information on all products or services advertised or featured in this issue in the categories I have circled below:

801 Alarm and signaling systems
802 Building products, structural and electrical
803 Detection systems and accessories
804 Education
805 Fire suppression systems and accessories
806 Sprinkler systems and accessories
807 Testing

Job Title:
- ☐ A Architect, Engineer, Consultant, Contractor
- ☐ B Owner, President, Manager, Administrator
- ☐ C Fire Chief, Other Fire Service
- ☐ D Facilities Safety Officer
- ☐ E Inspector, Building Official, Fire Marshal
- ☐ F Loss Control, Risk Manager
- ☐ G Other:_____

Reason for Inquiry:
- ☐ H Immediate Purchase
- ☐ I Future Project

Type of Organization:
- ☐ J Architecture, Engineering, Contracting
- ☐ K Government
- ☐ L Fire Service, Public and Private
- ☐ M Industrial Firm (Factory, Warehouse)
- ☐ N Commercial Firm (Office, Retail, Lodging, Restaurant)
- ☐ O Institutional (Health Care, Education, Detention, Museums)
- ☐ P Electrical Services, Installation
- ☐ Q Insurance, Risk Management
- ☐ R Utilities
- ☐ S Other_____

Purchasing Authority:
- ☐ T Recommend
- ☐ U Specify
- ☐ V Approve

www.nfpa.org/productinfo

We would appreciate your comments...

LETTER TO THE EDITOR _____

NAME _____

TITLE _____ COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____ COUNTRY _____

E-MAIL _____ PHONE ( ) _____

NFPA®

No Postage Necessary if Mailed in the United States

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 868 CINNAMINSON, NJ

POSTAGE WILL BE PAID BY ADDRESSEE

NFPA JOURNAL
P.O. Box 413050
Naples, FL 34101-6898

No Postage Necessary if Mailed in the United States

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 868 CINNAMINSON, NJ

POSTAGE WILL BE PAID BY ADDRESSEE

NFPA JOURNAL
P.O. Box 413050
Naples, FL 34101-6898

No Postage Necessary if Mailed in the United States

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 5347 QUINCY, MA

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN: KATHLEEN ROBINSON
NFPA JOURNAL MAGAZINE
P.O. BOX 9101
QUINCY MA 02269-9101

Visit www.nfpa.org/productinfo, fax to 1-888-847-6035, or mail this postpaid card today.

SEND FOR FREE INFORMATION TODAY!

Use these Reader Service cards to receive FREE information on products and services valuable to you and your business at no cost or obligation. Complete the required information, then circle the numbers that correspond to the numbers on the advertisements or editorial listings in this issue.

Visit our website today!

NFPA®

In This Issue

though, is that on Class I and II sprinkler systems, an alarm check valve should be capable of providing adequate backflow protection for new installations provided it contains specific features. These features were not available at the time the report was written. Such a device is now available.

Let's start by providing some definitions and briefly discussing the objectives for both sides of the issues and the fire protection problems with these devices. This discussion is applicable only to Class I and II wet-pipe sprinkler systems. AWWA defines a Class I system as having "Direct connections from public mains only; no pumps, tanks, or reservoirs; no physical connections from other water supplies; no antifreeze or other additives of any kind; all sprinkler drains discharge to atmosphere, dry wells, or other safe outlets." A Class II system is the same as a Class I but with a fire pump installed in the connection from the street main. This encompasses a majority of the systems.

The objective of the water community is to provide clean, safe water as required under the Safe Drinking Water Act. In order to accomplish this, they not only have to treat the water they supply but also ensure that any connection to their distribution system does not contaminate the supply. Such contamination is not restricted to just items that cause immediate, severe health problems but also long-term health issues, such as exposure to heavy metals. Water quality, such as color (or the lack thereof), taste, and odor, are also controlled. If a system connected to the water supply contains any characteristic that violates the specified allowed limits, some type of backflow prevention assembly is required. Whether these assemblies interfere with forward flow or other functions of the connected system is secondary compared to stopping the potential for backflow. This is where the conflicts start. The objective of the sprinkler community is to maximize the reliability of water supply in the direction of flow. Additionally, minimizing the potential for water damage is extremely important, thus the need for water flow alarms. It's widely known that the current backflow preventers have failed regarding forward flow and can interfere with the ability of the water flow alarm to activate. So what's the answer?

One answer is to simply live with things as they are. This is not acceptable, since all parties are interested in the overall well-being of society, not to mention avoiding unnecessary liability. There is another option that can meet the performance objectives of both communities. The AWWARF study sheds much more light on this issue.

The need for monitoring

Failure rates in regard to backflow, referenced by the AWWARF study, showed an 8.7 percent failure rate for double check valve assemblies with a 2 percent failure rate for both check valves. If such a failure occurs right after an inspection, backflow can occur for a year or more before it is caught. Since there is no visual indication of a problem, in order to provide a truly adequate level of protection against such high failure rates, there needs to be a means to automatically monitor when both checks are fouled. For comparative purposes, the failure rate of sprinkler systems was identified as 4 percent, but these were standard check valves that had apparently not been maintained. There were no identified failures of the alarm check valve itself.

Additional applicable information is that a standard alarm check valve on an existing system is considered to provide adequate backflow protection. As currently designed, though, these devices are not deemed adequate for a new installation. This is not a performance issue but stems from the base requirement that only double check valve assemblies can be approved.

Need for a new device

The AWWARF study made some extremely pertinent statements on this issue. These are:

1. "Alarm check valves are reliable devices" but more study is needed to determine the number of failures (to prevent backflow). As already pointed out, the identified failures have all been standard check valves with no maintenance.
2. There exists a need for a new cross-connection assembly for Class I and II sprinkler systems. It was described as "the proposed features of this new and unique backflow alarm assembly are based on the inventive ideas developed by the authors. These devices should have similar operating features to that of an alarm check valve and be equipped with an alarm feature that would indicate when the main clapper is in the open position, but the device should be provided with test cocks for testing purposes, and the check valve in the bypass line should be replaced with a rubber-seated check valve. The tolerances of the main check should be similar to the tolerances of a check valve in a backflow preventer."
3. "A standardized cross-connection control testing protocol for wet-pipe fire sprinkler alarm check valves does not currently exist but is essential for monitoring the performance of alarm check valves and hence should be developed."

Such a device now exists. It's a standard alarm check valve monitored by the AFCON Model 1100 component. The combined assembly does not affect the operational features of the alarm check valve. Rubber-seated check valves in the by-pass line are no longer an issue, since their use is now standard practice. The tolerances of the main check of an alarm valve is not an issue, since, if anything, [it is] designed and manufactured to a higher standard. This assembly monitors the integrity of the alarm valve seal and not just whether the clapper is on the seat. This assures us that, if water is leaking past a damaged gasket, it, too, is detected.

Superior performance

The only real hurdle is the false premise that two check valves are better than one.

It's obvious that the performance of two devices of the same mechanical design is superior to that of one, especially if evaluating only one operating characteristic. This is shown by the much smaller failure rate of both checks versus that of one check. The fallacy is in equating the design of these checks to that used in the alarm check valve.

Check valves are designed to lift when there is a pressure difference and close when there is none. The backflow preventers use either a poppet-type, where a valve stem travels up and down through a hole, or a swing-type, where components glide up and down a track. The alarm check valve is simply hinged at the side and freely swings. The design of the backflow preventers reflects the expectation that it's used in a dynamic system where there is a regular flow of water. Sprinkler systems, though, sit dormant for long periods of time with no water flowing, and the alarm check valve was designed to operate in such static conditions. These mechanical designs are as different as night and day, and the presumption that two devices with more moving parts and greater susceptibility to failure are superior to a different single device is incorrect. This is especially true when requiring the devices to satisfy all safety functions, such as full forward flow, and not just backflow.

In conclusion, the AWWARF study has identified that both the water and sprinkler communities are tasked with safeguarding society. When a single device is attempting to serve both communities, all objectives must be met. It has clearly identified an option that would improve the overall ability for a single device in fulfilling this dual capacity. We now have such a device for new installations, and it's up to both communities to study it and modify their standards and practices as needed if they are truly interested in properly serving the safety needs of society.

HOW TO REACH US: David Hague, Executive Secretary, (617) 984-7452, dhague@nfpa.org

Education

WEB SITE: http://www.nfpa.org/edsection
CHAIR: Peg Carson, Carson Associates

CHAIR'S CORNER
Identifying Public Education Problems and Needs

At the NFPA Fall Education Conference last November, we surveyed public educators about the most prevalent fire and life safety problems and educational needs in their communities. Their responses probably won't surprise: It seems we continue to address familiar fire causes and still need more funding and personnel to handle the problems of high-risk populations more effectively.

Our very unscientific survey questions were designed to help us plan future section activity. The most frequent responses to the question "What are the two major fire and life safety problems in your community?" were kitchen fires, older adults' homes, lack of adequate smoke alarm protection, pedestrian and automobile crashes, and lack of escape planning.

To the question "What do you need to be more effective in fire and life safety education?," the most frequent responses were funding, ideas and resources that work, personnel and time, training for public educators, and community participation and cooperation.

The information we gathered will help us plan future programs and enhance our Web site, to which we soon expect to add a bulletin board where educators can share ideas and experiences. If you are not a member of the Education Section, please ask NFPA to add this section to your membership.

We look forward to hearing from you.

Is It Time to Rethink Our Fire Safety Messages?

by MARY CORSO

Fire safety messages are not new. I read an old piece of "propaganda" from an insurance company published in 1908, and the messages we preach today are the same we preached then. Why, in 96 years, have we not solved the problem of home fires?

My thoughts are not of single solutions, but of public education concepts and messages that will save lives. These messages cannot be confusing or incomplete. They must provide the right amount of knowledge to be successful. As an old friend in the business said, "We need to start teaching congruent messages and behaviors that provide enough information and understanding to ensure people know what to do at the right time."

Let me use an example: "If your clothes catch fire, stop, drop, and roll!" This is a simple sentence calling for a simple action. But does it provide enough knowledge, in a comprehensible enough fashion, to ensure proper application if a fire occurs? Can it be misinterpreted? Does it tell you what to do after you stop, drop, and roll?

We can't always provide in one sitting all the information people need to respond to fires properly. Hence, the potential problem.

So what do we do? We might elaborate on the message: "When your body comes too close to fire, your clothes could ignite. If that happens, drop to the ground, cover your face, and roll your body until the flames go out. Then cool your burns with water, call for help immediately, and seek medical attention." We might then shorten the message: "If your clothes catch fire, stop, drop, roll, cool, and call."

By adding three words, we can provide the continuum of information you'll need if a fire occurs. Yes, the message is longer, but it provides knowledge, promotes comprehension, and encourages application. It also packages information together, so you don't have to think of what to do next.

We've done great things to help people prevent, react to, and reduce fires. But can we do it better? Should we do it differently? Do the old messages confuse people? Do they provide enough specific information? Should we look at the current messages to see whether we can improve them to ensure that people know, understand, and can do what they must to prevent or react to a fire? If we always do what we always did, we will always get what we always got.

This is the message from a 30-year veteran of fire prevention who, late at night, ponders whether there are other ways to ensure that our fire prevention and reaction strategies give people the knowledge they need to perform the behaviors that can save their lives.

Editor's note: There is always a tradeoff when deciding between a comprehensive

message and one that is simple and easy to remember. NFPA's Education Messages Advisory Committee, which revisits our educational messages annually, reviewed the "stop, drop, and roll" message in August 2004 and decided to keep the message simple: If your clothes catch fire, stop, drop, and roll.

HOW TO REACH US: Judy Comoletti, Executive Secretary, (617) 984-7287, jcomoletti@nfpa.org

Electrical

WEB SITE: http://www.nfpa.org/electrical
CHAIR: Paul Dobrowsky, Innovative Technology Services

HOT ISSUES

Technical Committees Seeking Members

The Committee on Carbon Monoxide Detection is seeking members in all interest categories except manufacturers and users. This committee is responsible for NFPA 720, *Recommended Practice for the Installation of Household Carbon Monoxide (CO) Warning Equipment.*

The Committee on Electrical Systems Maintenance is seeking members in all interest categories except special experts. This committee is responsible for NFPA 73, *Electrical Inspection Code for Existing Dwellings.*

The Committees on Health Care Facilities–Electrical Equipment and Health Care Facilities–Electrical Systems are seeking members in all interest categories except users and special experts, respectively. These committees are responsible for chapters in NFPA 99, *Health Care Facilities.*

The Committee on Electrical Systems for Manufactured Housing is seeking members in all interest categories except manufacturer and enforcer. This committee is responsible for chapters in NFPA 501, *Manufactured Housing*; NFPA 501A, *Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities*; and NFPA 225, *Model Manufactured Home Installation Standard.*

The Committee on Public Fire Reporting Systems is seeking members in all categories except manufacturers. This committee is responsible for chapters in NFPA 72, *National Fire Alarm Code.*

The Committee on Static Electricity is seeking members in all interest categories except special expert. This committee is responsible for NFPA 77, *Recommended Practice on Static Electricity.*

William H. King, Jr., Receives Committee Service Award

The NFPA Standards Council honored William H. King, Jr., a leading advocate for electrical safety in the United States, with a Committee Service Award at the November Technical Committee Report Session, the concluding event of last year's NFPA Fall Education Conference in Miami. Committee Service Awards are presented to technical committee members for continuous voluntary service over a substantial period of time, in recognition and appreciation of distinguished service to NFPA in the development of NFPA codes and standards.

King recently retired from the U.S. Consumer Product Safety Commission. He has served on many NEC Code-Making Panels, including Panel 15 from 1976 to 1977; Panel 2 from 1976 to 1977; Panel 10 from 1982 to 1983; Panel 20 from 1990 to 2002; and Panel 17 from 2002 to 2004. He was also a member of the Electrical Systems Maintenance Committee from 1997 to 2004.

HOW TO REACH US: Jeff Sargent, Executive Secretary, (617) 984-7442, jsargent@nfpa.org

Revision Cycle for NFPA Electrical Documents

Document	Comment Closing Date	ROC Meeting Dates/ Location
NFPA 70B, *Recommended Practice for Electrical Equipment Maintenance*	3/25/2005	TBD
NFPA 72, *National Fire Alarm Code*	9/2/2005	10/24-29/2005, Orlando, FL
NFPA 79, *Electrical Standard for Industrial Machinery*	3/25/2005 (ROP draft available)	4/27-4/29/2005, Albuquerque, NM (tentative)

Fire Science and Technology Educators

WEB SITE: http://www.nfpa.org/firescience
CHAIR: Patrick Kennedy, John A. Kennedy & Associates

Chair's Corner

Once again, it is my honor and pleasure to have been elected chair of the Executive Board of the NFPA Fire Science and Technology Educators Section. When I was originally elected to the Executive Board way back in 1986, and during my previous years as chair from 1991 to 1996, there were many fewer members.

Through the enlightened leadership of my immediate predecessor, Professor Ron Hopkins, our membership has increased to more than 500. I'm not sure how many of you realize that, when Ron took over the section in 2000, NFPA was contemplating disbanding it because of low membership. Under Ron's direction, and with the considerable efforts of the Executive Board, section membership has more than tripled, the section's existence is assured, and the section's important work will continue.

Now I have again been charged with steering this illustrious group of educators, teachers, and mentors of future fire science and technology leaders. To my mind, the future of fire science and technology education is changing as fast as both fire science and technology and the education and training community. These are the two dynamics the current Executive Board will address.

We will mirror what is happening in both fire science and technology research and in modern educational philosophy. During the next two years, we will discuss what is happening on the cutting edge of fire science, research, and technology transfer. We plan to address the forward-looking nature of such fire research issues as computer fire modeling and educational innovations, such as distance learning.

But we cannot do this alone. We need your input and support. I urge you to help us in these endeavors with the enthusiasm and spirit of professionalism you display in your daily educational activities and in the spirit of volunteerism embodied in our most recent membership increases.

HOW TO REACH US: Frank Florence, Executive Secretary, (617) 984-7480, fflorence@nfpa.org

Fire Service

WEB SITE: http://www.nfpa.org/fireservice
CHAIR: Terry Allen, Chief, Cambridge, Ontario, Canada

HOT ISSUES

New Training Publication Available

Written by experienced fire service faculty from colleges and fire departments, *Fundamentals of Fire Protection* provides a solid introduction to the full range of fire protection topics. Designed for classroom instruction or self-study, this resource is ideal for students preparing to enter the field or fire protection professionals who want to advance their career.

Fundamentals is the only text organized around the "Fundamentals of Fire Protection" course developed by NFPA's Fire and Emergency Services Higher Education (FESHE) Conference.

The book's 12 chapters are designed for a 12- or 13-week semester of study. Each chapter features educational objectives based on those developed by FESHE, review questions with an answer key, and student activities.

For information about this product, visit www.nfpa.org under Fire Protection.

HOW TO REACH US: Gary Tokle, Executive Secretary, (617) 984-7490, gtokle@nfpa.org

Health Care

WEB SITE: http://www.nfpa.org/healthcare
CHAIR: Richard Strub, Chattanooga, Tennessee

Chair's Corner

As of this writing, I have just returned from NFPA's final, historic Fall Education Conference in Miami. NFPA will now host a single meeting, the World Safety Conference and Exposition™, every June. This year's meeting will take place from June 6 to 10 in Las Vegas.

The conference in November was also historic for me personally, in that I am now the immediate past chair of the Health Care Section. I would like to take this opportunity to thank the members of the Executive Board for their support and guidance during my term and the Health Care Section membership for the vital role you play in the section's continued growth. Many of you have contacted me with questions, comments, and suggestions, and I thank you for your continued interest and participation.

We have begun several initiatives to enhance the section's vitality, and I am confident that the new Executive Board will continue to implement these and other valuable services for the membership.

Special congratulations to incoming Chair Sue McLaughlin, First Vice-Chair Tom Gardner, Second Vice-Chair Dean Menken, and Secretary Phil Thomas. Coupled with the support of the rest of the Executive Board members, the section is in good hands.

Please make plans now to attend the June meeting in Las Vegas as there are several codes the Codes and Standards Review Committee has identified as having a potential impact on the health care industry. Of particular significance is NFPA 101®, *Life Safety Code®*, which will include a proposal for mandatory installation of sprinklers in all nursing homes and another permitting alcohol-based hand cleaners in health care facility corridors.

HOW TO REACH US: Richard Bielen, Executive Secretary, (617) 984-7279, rbielen@nfpa.org

Industrial Fire Protection

WEB SITE: http://www.nfpa.org/industrial
CHAIR: Mike Snyder, Dow Corning Corporation

Protect Your Facility from Winter's Sting!
Winter weather presents a number of loss prevention challenges at industrial facilities. Heavy snowfalls can collapse roofs, disrupting operations, and severe cold can wreak havoc with building systems and equipment. Even facilities in more temperate climates can feel the effects of a cold snap.

Despite the perils, however, the effects of winter weather can be handled if an effective cold weather strategy is in place before the season arrives. Facility management should be aware of potential winter problems and have in place a cold weather strategy that includes a system to monitor weather conditions and implement cold weather procedures when needed.

The building exterior is probably the place to start when developing a cold weather strategy. The facility must remain accessible, which means that snow has to be dealt with, especially where the building's roof and fire protection equipment are concerned. And drains must be properly maintained to prevent water from accumulating as the snow thaws.

Inside the building, heat must be maintained to prevent piping and equipment from freezing. Heating equipment must be in good repair, and doors and windows properly maintained to protect from the elements. Remote, hard-to-heat areas should have supplemental heating.

Keeping fire protection equipment, including fire pumps, suction ponds or tanks, hydrants, and fire extinguishers in service is critically important. Access to equipment must be maintained. Fire protection systems should be prepared for winter before it arrives so everything is ready before that first cold blast.

Another important part of a cold weather strategy is having contingency plans in place to help deal with the unexpected.

These are just a few thoughts to keep in mind when developing a strategy for countering winter's effects. Every facility is unique, but all will benefit from having an annually updated strategy in place.

HOW TO REACH US: Guy Colonna, Executive Secretary, (617) 984-7435, gcolonna@nfpa.org

International Fire Marshals Association

WEB SITE: http://www.nfpa.org/ifma
CHAIR: Fire Marshal Scott Adams, Park City, Utah, Fire District

HOT ISSUES

Regional Code Committee Meetings
To encourage fire service participation in the NFPA codes- and standards-making system, NFPA and IFMA have established four regional committees responsible for developing proposals for changes to NFPA codes and standards, reviewing *Report on Proposals* (ROP), developing comments on proposed changes, and liaising with regional fire service on issues pertaining to NFPA codes and standards.

The fall regional fire code development committee meeting schedule is available at www.nfpa.org/Codes/RegionalFireCode/RegionalFireCode.asp. There is no cost to attend these meetings, but attendees are responsible for all costs associated with their participation. For information, contact section Executive Secretary.

IFMA Awards Meritorious Service Award
At IFMA's Annual Meeting in November, Wayne Powell, chief of the Citizen and Community Preparedness Branch of the U.S. Fire Administration's (USFA) National Fire Programs Division, received the IFMA Meritorious Service Award for dedicated service in promoting fire prevention at the local, state, and federal levels.

Wayne has been involved with the fire service for over 44 years, starting as a volunteer in Silver Spring, Maryland. He is now a volunteer with the Vigilant Hose Company in Emmitsburg, Maryland. Wayne began his career at the National Fire Academy in January 1977. Currently, he is responsible for a wide array of prevention programs, products, and services, including public education awareness and resources, interaction with other federal agencies on fire protection matters, coordination with national fire service/fire safety advocacy organizations, and intra-agency mitigation matters. As the individual responsible for National Fire Program activities and "all things prevention" at USFA, Wayne has kept prevention on the minds of the administration when it was not necessarily a priority. Among other things, he was instrumental in getting funding for the PARADE (Prevention Advocacy Resource Data Exchange) program, which invites state and metro fire marshals and IFMA representatives to a meeting to discuss fire prevention issues.

IFMA introduced the Meritorious Service Award honor in 2000 to recognize IFMA members for notable service in the public fire safety fields, including, but not limited to, fire prevention, fire inspection, fire-safety education, fire investigation, code enforcement, and fire code development in keeping with the highest traditions of the Association.

IFMA Annual Meeting in Las Vegas
IFMA's annual meeting will move from November to June this year, as a result of NFPA's decision to suspend the Fall Education Conference. Please join us in Las Vegas from June 5 to 10, when we will, as usual, we hold the chapter presidents' meeting. Stay tuned for more information.

Professional Development
The International Fire Marshals Association Fire Protection Institute *Principles of Fire Protection Engineering* course and the performance-based design course are being offered in conjunction with the SFPE's professional development weeks in 2005. Anyone interested in attending or sponsoring a program may contact Section Executive Secretary Steven F. Sawyer at (617) 984-7423 or ssawyer@nfpa.org. Visit www.nfpa.org/ifma for complete details.

And Don't Forget
Planning for the 100th anniversary is progressing. The celebration will take place at the NFPA World Safety Conference and Exhibition in Orlando in 2006.

HOW TO REACH US: Steven Sawyer, Executive Secretary, (617) 984-7423, ssawyer@nfpa.org

Latin American

WEB SITE: http://www.nfpa.org/latinamerican
CHAIR: José Figueroa, FM Global

HOT ISSUES

Argentina 2004

The Buenos Aires International Safety Exposition and Congress (BISEC), was held from October 27 to 29 in Buenos Aires, Argentina. Conference sponsors NFPA, the Argentine Standards Institute (IRAM), and the Argentine Security Chamber (CAS) provided strategic and academic support.

NFPA President James Shannon, IRAM President José Francisco Lopez, and CAS President Ignacio Bunge gave the opening remarks. During the conference, Shannon also officially launched NFPA's Argentina Chapter by presenting Chapter Vice-President Néstor Spósito with its charter.

BISEC was aimed at professionals looking for new technologies and codes and standards, and interested in creating a regional network among the countries in the Mercosur. Popular sessions included "Mis Primeros Pasos" training by NFPA trainer Maria Figueroa of the Miami-Dade Fire Department; "Intervention Devices for Large-Scale Attacks: Madrid's Metro Experience on March 11" by Madrid Fire Chief Juan Redondo; "Decision-Making and Management in Critical Emergencies" by New York City Fire Chief Stephan Timan; and NFPA Latin American Section Board Director Eduardo Álvarez's presentation on the tragic supermarket fire in Paraguay.

Fire Expo México 2004

The first annual Fire Expo México, which took place from November 9 to 11 in Mexico City, attracted more than 5,000 fire safety professionals.

Representing NFPA were Executive Vice-President and Chief Engineer Arthur Cote; Director for Latin American Operations Olga Caledonia; Regional Director for México, the Caribbean, and Central America Antonio Macias; and Mexico Chapter President Ugolino Durán.

In conjunction with the Expo, NFPA and the International Risk Management Institute organized the first National Fire Safety Congress, which attracted more than 500 participants and 28 speakers from México, Scotland, Argentina, Puerto Rico, the United States, and Spain.

At the congress, NFPA Latin American Section Member Fernando Vigara Murillo presented a paper on NFPA 750, *Water Mist Fire Protection Systems*; Carmen Segura Rangel discussed applying civil protection standards in México; and Dr. José Torero addressed lessons learned from the collapse of the World Trade Center's twin towers in New York.

In conjunction with the congress, NFPA organized the NEC® Forum–México. The forum addressed topics such as "NEC 2005 Classified Areas," by Santos Pablo Carvajal of the Mexican Univerity of Mechanical and Electrical Engineers; "Optimum Performance of Electrical Systems to Reduce Arc Flash" by George Gregory of Schneider Electric; and "NFPA 780, *Installation of Lightning Protection Systems*," by Juan Marchelli of Grounding Systems Protection.

HOW TO REACH US: Olga Caledonia, Executive Secretary, (617) 984-7231, ocaledonia@nfpa.org

Lodging Industry

WEB SITE: http://www.nfpa.org/lodging
CHAIR: Richard Anderson, Chimney Hill Farm Inn

HOT ISSUES

Low Rates Can Be Hazardous to Your Health

by RICHARD R. ANDERSON

Happy New Year—well, here's hoping. In recent years, multiple-death fires in lodging facilities have all but disappeared from the headlines, thanks to the installation of automatic fire sprinklers in new construction and retrofitted properties. Nonetheless, we began 2004 with the tragic deaths of six people in a Comfort Inn in South Carolina.

Upon learning of the tragedy, NFPA dispatched Senior Fire Investigator Robert Duval to South Carolina to learn what had happened. The investigation revealed that the fire erupted on Sunday, January 25, at 4:30 a.m. in the third-floor corridor of the five-story hotel. Six occupants died in the fire, the cause of which is still under investigation, and 12 were injured. Contributing factors were a lack of sprinkler protection, delayed notification, and occupant behavior.

The configuration of the Comfort Inn, a mid-range price hotel of non-combustible construction, was characteristic of the hundreds of mid- and low-price hotels that line U.S. highways, with one exception: it wasn't fully sprinklered. Although it had been outfitted with smoke detectors, a fire alarm system, and a fire pump to support the standpipe system, the laundry chute was the only area sprinklered.

Why aren't all hotels sprinklered?

The argument for and against sprinklers rages on among hotel property owners across the United States. If the code doesn't require us to sprinkler the property, some ask, why do it? For the insurance savings? The fact is that the return on such an investment from an insurance savings perspective may be as long as seven years, and financial managers are moved by four-year returns or less.

What about the marketing advantage of sprinklered properties? Unless you are advertising your property to government employees, sprinklers aren't seen as giving you a marketing advantage. The Hotel and Motel Fire Safety Act of 1990 (PL101-391) mandates that federal employees must stay in public accommodations that adhere to the life safety requirements in the legislation guidelines when they travel. The Act also states that federally funded meetings and conferences cannot be held in properties that do not comply with the law.

PL101-391 is applicable to all places of public accommodation and requires that each guest room be equipped with hard-wired, single-station smoke detectors and an automatic sprinkler. Properties three stories or lower are exempt from the sprinkler requirement. Though five stories high, the Comfort Inn was built in the 1980s, thus predating these more stringent fire codes, and recent remodeling hadn't included any additions, said Gary Downey, chief of the Wade Hampton Fire District.

When asked about requiring hotels to retrofit sprinklers, South Carolina State Rep. Karl Allen of Greenville said, "The issue itself is one of grave importance. Certainly a life is worth a sprinkler system."

For every supporter, however, there is

a detractor. Take the owner of a Ramada Inn in North Carolina, who once said that sprinklers could be very costly and weren't always worth it. He said it would cost him at least $300,000 to retrofit his five-story hotel and that the cost would far outweigh the benefit, noting that the structure had direct-wire and battery-operated smoke alarms, could be reached by extension ladders, and had concrete walls 6 inches (15 centimeters) thick.

How do we change this state of affairs? Perhaps we should call for model codes to require that all hotels in areas where new codes require automatic sprinklers be retrofitted within three years. Of course, that requires fighting off the lobbyists. Maybe a kinder, gentler approach is getting the active support of U.S. Senator Rick Santorum (R-PA), chair of the Senate Republican Conference, for the Fire Sprinkler Incentive Act of 2004 (S.2860) or for HR 1824, also titled the Fire Sprinkler Incentive Act (2003), previously introduced by Representatives Weldon and Langevin. Both bills call for amending the tax code to classify automatic fire sprinklers as five-year property for purposes of depreciation as opposed to the current 27.5- or 39-year periods.

Or perhaps we can simply protect our families by not staying in an unsprinklered hotel. Not only will property owners eventually get the message, but you'll get an added benefit: your family won't die in a hotel fire.

Richard R. Anderson, C.F.P.S., is chair of the NFPA Lodging Industry Executive Committee and a managing director of Anderson Risk Consultants.

HOW TO REACH US: Greg Harrington, Executive Secretary, (617) 984-7471, gharrington@nfpa.org

Metropolitan Fire Chiefs

WEB SITE: http://www.nfpa.org/metro
CHAIR: Rebecca Denlinger, Cobb County, Georgia, Fire and Emergency Services

HOT ISSUES

Put Your Finger on the Button

by GARY WARREN

Austin, Texas, is the sixteenth largest city in the United States, with a population of more than 700,000 people. The Austin Fire Department (AFD) has recorded structure fire fatalities for longer than I've been a member, and I've worked in the AFD for more than 30 years.

During that time, we've generally had three to five fire deaths a year. In 2002, however, nine people had died in residential structure fires by July, and we were well on our way to setting a new record. By the end of the year, Austin had 13 fire fatalities.

With this disturbing situation in mind, members of the Fire Prevention Division of the Austin Fire Department began to study the data gathered from these deadly fires. After combing through the reports, we noticed a common thread: although all of the homes had smoke detectors, none had a working smoke detector.

We know that home smoke detectors double occupants' chances of getting out alive in the event of a fire. We also know that fire codes and smoke detector drives have, for the most part, ensured that there are smoke detectors in every home in the United States. What appears to be lacking is follow-up training in the importance of testing smoke detectors to ensure that they work.

With this dramatic piece of information in hand, the AFD set out to grab the attention of Austin's citizens. We presented our appeals in the local media, and a marketing firm, Special Audience Marketing (SAM), donated its services to help us build an awareness campaign.

Citizens were asked to test their smoke detectors, then put their fingers in the air and say, "Put your finger on the button." This simple but effective phrase became the keystone for our marketing campaign, along with several other slogans, such as "Put a finger on it!," "Lift a finger for fire safety," and "Stay in touch with fire safety." These messages were coupled with graphics depicting the one gesture our focus group participants recognized as critical to testing their smoke alarms: lifting a finger.

With the creative work done, the fire department set about spreading the word. We made foam fingers decorated with our smoke detector mascot "Freddy the Finger." We distributed door hangers to more than 100,000 residences, posted our messages on local billboards, and ran stories on all the local media outlets.

The result? Austin has gone more than 14 consecutive months without a single residential fire death, and nine people are alive today because they replaced their alarms or the batteries in their alarms as a result of the information they received through our campaign.

The fire service can claim a major victory in getting smoke detectors into the homes of our citizens. Now it is time to follow up and get everyone to test and repair or replace those detectors that don't work.

HOW TO REACH US: Russ Sanders, Executive Secretary, (502) 894-0411, rsanders@nfpa.org

Rail Transportation Systems

WEB SITE: http://www.nfpa.org/rail
CHAIR: James Gourley, Fire Protection Engineer
HOW TO REACH US: Jim Lake, Executive Secretary, (617) 984-7470, jlake@nfpa.org

Research

WEB SITE: http://www.nfpa.org/researchsection
CHAIR: Daniel Madrzykowski, National Institute of Standards and Technology

HOT ISSUES

Chair's Corner

The Research Section sponsored 10 well-attended and well-received presentations at the NFPA Fall Education Conference held in Miami Beach last November.

More than half the sessions focused on the needs of the fire service, with presentations by Dan Madrzykowski and Nelson Bryner on the National Institute of Standards and Technology's (NIST's) research into structural collapse, computer modeling for firefighter training, thermal performance of firefighter protective clothing, thermal cameras, and fire dynamics for the fire service. Steve Kerber of NIST and the College Park, Maryland, Fire Department spoke about NIST's research on positive-pressure ventilation tactics. Many of these projects are jointly funded by the U.S. Fire Administration, part of the Department of Homeland Security. For more information, go to fire.nist.gov, or fire.gov.

The remaining sessions focused on tenability analysis, human behavior, The Station Night Club fire, and the Fire Protection Research Foundation's activities. This portion of the program began with a three-part panel on tenability technology. Craig Beyler provided an overview of the measures and limits of tenability. He was followed by Doug Evans and John Klote, who presented applications of models in developing tenability analyses for use in fire-safety design. NFPA's Rita Fahy provided insight into people's behavior in responding to fires, presenting and explaining several examples of delayed response to fires.

NIST is leading a National Construction Safety Team (NCST) investigation into The Station Night Club fire. The NCST is using both physical and computational models to simulate the fire and to examine the impact automatic fire sprinklers would have had on it and the building occupants.

Finally, the Research Foundation updated attendees on the electrical grounding, residential electrical system

aging, and road tunnel fire detection projects. Foundation projects currently being developed include a national firefighter gas exposure study; a study benchmarking vehicle fire safety; and studies of intermediate bulk container protection, solid-shelf rack storage sprinklers, and signaling systems for the hearing-impaired.

Presentation handouts and audio recordings of the sessions can be purchased from the NFPA Web site at www.nfpa.org.

We have another exciting program planned for the NFPA World Safety Conference™ in Las Vegas next June. Keep an eye on this space and the Web site for details.

First Report of Residential Electrical System Aging Project

In 2002, the Fire Protection Research Foundation began a two-phase project designed to address the influence of aging and installation quality on electrical system fire safety. In Phase I, the Foundation would undertake a comprehensive survey of the condition of samples of electrical components from different eras and locations in the United States to determine the characteristics influencing their performance. In Phase II, it would pilot test a post-fire investigation checklist to help document the relationship between system age or installed condition and impact on fire incidence.

Phase I of the project was completed in September 2004. Lessons learned include the potential impact of original installation quality and inspections as factors to consider in performance.

In Phase II, electrical systems from more than 100 homes will be inspected and tested, and residential fires identified as electrical in origin will be investigated.

This project will provide critical information to code-writers, authorities having jurisdiction, electrical equipment manufacturers, installers, property owners, and insurers.

For more information, contact Steve Hanly at shanly@nfpa.org.

HOW TO REACH US: Rita Fahy, Executive Secretary, (617) 984-7460, rfahy@nfpa.org

Wildland Fire Management

WEB SITE: http://www.nfpa.org/wildland
CHAIR: Bill Terry, USDA Forest Service

HOT ISSUES

Stay or Go When Wildfire Threatens?

Applying the Firewise concept is the first step in preparing structures to survive a wildfire. But who prepares their residents? Should homeowners take shelter or flight when a wildfire approaches?

In 2002, the National Wildland/Urban Interface Fire Program published its recommendations for residents facing an imminent wildland fire. Included was the following paragraph:

> Be prepared to evacuate all residents if necessary. In some cases, a homeowner may choose to remain with the home to help provide protection...The decision to remain with your property is a personal choice, which should be made only if conditions allow for your personal safety.

For years, evacuation has been the choice for public safety in the face of an advancing wildfire. As more individuals implement Firewise practices, however, there has been a shift in thinking. If a home is defensible, people may be safer if they stay put.

In Australia, authorities have for several years stressed either evacuating early or staying put. In some instances, residents who hear a fire report prepare their homes as best they can and leave, allowing authorities to manage the fire without the burden of rescuing trapped residents.

In the United States, the debate continues.

The decision to evacuate or take shelter can be guided by a number of critical factors, including the weather; the topography; the nature of the fire, its fuels, and location; the condition of escape routes; the mobility of those being moved; the existence of an evacuation plan; and the means of communicating with those being evacuated.

The key components of an efficient evacuation are good multi-agency planning, including the establishment of safety zones; public education about fire

hazards and personal responsibility before, and clear communication during, the fire; a well-informed media and politicians; and ample escape routes.

When leaving is more dangerous than staying, safety zones should be established in advance to serve as temporary shelter. Firefighters can also use these safety zones, which often include community buildings such as hospitals and schools.

The U.S. Fire Administration (USFA) recommends developing emergency response systems and procedures that include evacuation instructions for people with disabilities and those living in residential group settings. According to the USFA, group living and working situations may increase vulnerability since "prompt evacuation...can be hampered due to the number of residents and their particular disabilities." The USFA recommends that emergency dispatch centers be allowed to routinely obtain information critical to specific needs of people with disabilities.

Presenters and participants also noted potential impediments to evacuation. These were a fire that prevents safe passage along planned evacuation routes; trying to move individuals who are unfit to be moved; inefficient planning and a poorly informed public; and panic.

By and large, presenters and participants acknowledged that many more deaths occur during evacuations than during wildfires. In the Oakland fire of 1991, 11 deaths occurred on one road during a frantic evacuation.

Most conference participants indicated that they would opt to "shelter in place" under the right conditions. Such conditions include thorough public education focused on potential hazards, appropriate actions in given situations, and the need for personal responsibility. Also important are a community effort that stresses planning and employs a fire department auxiliary and a community emergency response team, and homeowners who "Firewise" their homes and properties, and who are physically and mentally up to the challenges of staying in their homes.

In a presentation to the 2004 Natural Hazards Conference, Tom Cova of the University of Utah presented research findings that address the question of mandatory evacuation versus sheltering in place using animated maps of the Old/Grand Prix and the Cedar/Paradise fires that showed the progress of the fires and of evacuation orders. Cova looked at variables related to evacuation, such as the type of evacuation order and the distance from the fire when issued. None of those who stayed in their homes died.

Cova expects sheltering in place to increase, especially in areas with good defensible space and limited egress. The Firewise conditions under which residents might be allowed to remain should feature fire-resistant structures and fire-tolerant landscapes; neighborhood fuel treatments that include escape routes and safety zones; community-wide fuel treatments that allow the ecosystem to tolerate fire; watershed-scale fuel treatments; and landscape-scale fuel treatments.

Training, inspections, and annual certifications would also ensure that homeowners are appropriately informed and prepared. This would, in turn, free limited resources to fight fires in groups of structures, rather than protecting individual homes.

The pros of sheltering in place are numerous. It involves homeowners in their own defense. It keeps evacuees from clogging roads. It establishes safe buildings for residents and firefighters. It allows emergency services to maintain control while reducing the risk that firefighters will endanger themselves and others. It frees resources to fight fires instead of protecting homes. And it may help communities with limited egress.

That said, there may still be instances in which leaving is the safest option. By educating homeowners and community leaders about the nature of wildland/urban interface fires and the actions they can take, we will give them the tools to make better decisions and create communities that can manage wildfires while making the best use of available resources.

Communities constructed with a mind to defensible space and clear plans for both evacuation and sheltering in place can be prepared to take whichever action keeps its residents and firefighters safe.

Recommendations

The section recognizes the polemic nature of the traditional arguments and the personal nature of the stay-or-go decision. Though we advocate neither position, we do offer recommendations for consideration by federal, state, local agencies and residents in interface areas:

1. The section invites the NWCG Wildland/Urban Interface Fire Working Team to bring to bear its knowledge and resources to establish criteria for both shelter-in-place and evacuation tactics.
2. The section calls for a national forum on this issue. The growing density of structures in interface areas, the growing number of disabled people, and the aging infrastructure present a potential for disaster.
3. The knowledge of human behavior specialists and social scientists should be tapped to define the scope of the issue and guide the development of meaningful tools, such as education programs and policies.
4. Extensive research and development of targeted education programs forms the basis of sound decisions for survival.
5. The section supports an extensive literature search to help surface the issues and points of view necessary to extend the dialogue.
6. The section recommends developing a targeted program to raise residents' awareness of what can happen following a fire and their role in the aftermath, as well as measures for safe and timely evacuations.

We welcome input on this subject. Please fax Jim Smalley at (617) 984-7056 or email him at jsmalley@nfpa.org.

HOW TO REACH US: Jim Smalley, Executive Secretary, (617) 984-7483, jsmalley@nfpa.org

WHAT'S HOT

PRODUCT SPOTLIGHT

GRAPHICS-BASED FIRE SYSTEM MONITORING

Silent Knight introduces the IFP-Net Fire System Manager, a PC-based system that works with Silent Knight's intelligent analog/addressable fire control panels, the IFP-1000 and the IFP-100. The IFP-Net's easy-to-use interface allows users to graphically capture and display fire events and conditions throughout a facility. The IFP-Net has a graphical display interface that allows users to auto-navigate and locate the device related to an alarm or event based on the priority of the event. Floor plans can be easily viewed in different degrees of detail by using a built-in zoom feature. Easy-to-use pull-down menus and proximity displays are available for device-specific information and functions. A built-in history manager records operator, event and response with a time and date stamp for efficient record keeping. Graphics printing for floor plans, reports, and device listings is available (compatible graphics printer required). For more information, visit www.silentknight.com.

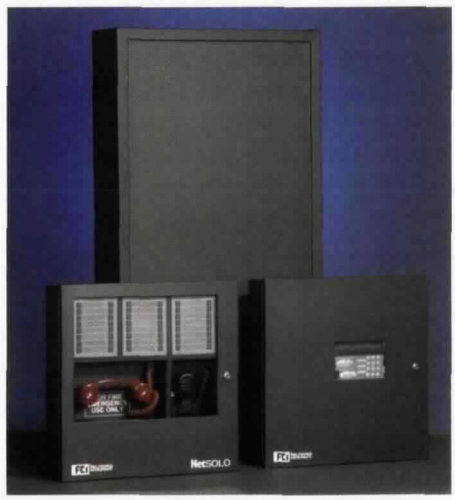
CIRCLE CARD NO. 101

SUPPRESSION SYSTEM AGENT CYLINDER

Siemens Building Technologies, Inc., is introducing the 1200 lb. FM-200® suppression system agent cylinder delivery system—the largest FM-200 agent delivery cylinder offered today by any FM-200 fire suppression system producer. A 1200 lb. agent can provide 24-hour suppression protection for areas up to 40,000 cubic feet. During a fire the system allows for a maximum of 1200 lbs. of FM-200 to be distributed through a fixed piping network for fast effective protection of a facility's most critical assets, where costly downtime due to fire and water damage is not an option.

CIRCLE CARD NO. 103

NEW WEB SITE



Fire Control Instruments (FCI) announces the launch of its newly designed Web site, www.firecontrolinstruments.com, which provides users with an in-depth view of the company and its products, as well as a link to a resource guide for the engineering community. Visitors can view company news, upcoming events, press releases, articles, and case studies. The easy-to-navigate layout allows for streamlined searches, with accompanying datasheets, manuals, software downloads and more. Information on FCI's diverse selection of both addressable and conventional fire alarm control panels, network systems, and voice evacuation products is readily accessible for customers and engineered systems distributors. For more information visit www.firecontrolinstruments.com.

CIRCLE CARD NO. 102

WHAT'SHOT

ANALOG ADDRESSABLE PANELS
Gamewell, a manufacturer of commercial fire alarm control panels and emergency life safety systems, introduces SmartScan—a new, fully digital communications protocol for improved event-reporting speed and accuracy. SmartScan provides alarm verification per detector and polling speed that is faster than existing protocols. The new protocol reduces panel end-to-end response to less than five seconds and supports 198 devices per loop (99 detectors and 99 modules). For more information visit www.gamewell.com.
CIRCLE CARD NO. 104

STRATEGIC MARKETING ALLIANCE
Noveon, Inc., the producer of BlazeMaster® CPVC, and FlexHead® Industries, the producer of flexible sprinkler connection products, have entered into an exclusive co-marketing agreement. Under this new agreement, Noveon and FlexHead will be promoting the use of an innovative fire sprinkler system using BlazeMaster pipe and fittings in combination with FlexHead flexible sprinkler connection products that have been determined to be chemically compatible with BlazeMaster CPVC. For more information, visit www.flexhead.com and www.blazemaster.com.
CIRCLE CARD NO. 105

EMERGENCY ACCESS SYSTEMS
Click2Enter-I (C2E) allows any radio transceiver (mobile or portable) to act as an access control device. The C2E is a powerful, intelligent, multi-user device that provides emergency response personnel improved response times, immediate, stealthy, secure, and universal access to gates, bollards, and roll-up/security doors. No modifications to present, mobile or portable, radios are required. To operate, you only need be in sight of the C2E and pulse your radio and the device opens.

Up to 50 different agencies can be programmed into one C2E device. Each C2E can operate within the entire spectrum of available frequencies, typically allocated to public safety agencies. For public safety organizations, the C2E solves the problem of mutual aid operations and the officer safety issue of stealth operation.
CIRCLE CARD NO. 106

SPEAKER STROBES
Wheelock Inc. has introduced the Series E50 Speakers and Speakers Strobes for fire alarm notification. The new wall mount speakers and speaker strobes are available in red and white and in a wide range of strobe intensities including 15/30/75/110cd and 135/185cd field selectable models and 1575cd (with 75 on axis).

For more information on all other Wheelock products and services please visit www.wheelockinc.com.
CIRCLE CARD NO. 107

ADDRESSABLE CONTROL PANEL
NOTIFIER introduces its newest intelligent addressable fire alarm control panel, the FireWarden 100™. Targeted at the small building market, FireWarden 100 features advanced smoke detection capabilities, auto-programming ease, and unparalleled dependability. Built on a platform of proven technology, the FireWarden 100 is a high-quality, single-loop panel with a capacity of up to 198 addressable NOTIFIER devices. This sophisticated fire alarm control panel is suited for small building owners who demand the flexibility of individual software zone mapping for their facilities. Auto detector testing, drift compensation, maintenance alert, and auto device type verification offer advanced maintenance and troubleshooting capabilities to ensure lower ownership costs for the life of the building. For more information visit www.notifier.com.
CIRCLE CARD NO. 109

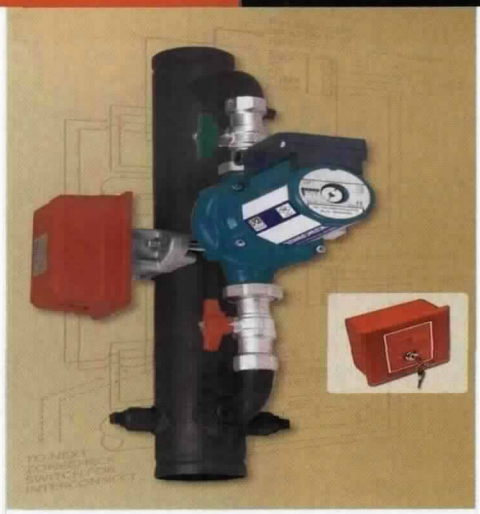
HIGH CANDELA STROBES
Edwards Systems Technology has added a new series of high-output strobes to its Genesis® line of emergency signals. Genesis high-cd signals are UL 1971 listed and ready for applications where high light intensity and broad flash coverage is critical. With selectable 95, 115, 150, or 177 candela settings, these signals offer the flexibility of field configuration and the power-saving advantage of choosing the most efficient light output setting for each application. For more information, visit www.est.net.
CIRCLE CARD NO. 108

PENDENT SPRINKLER

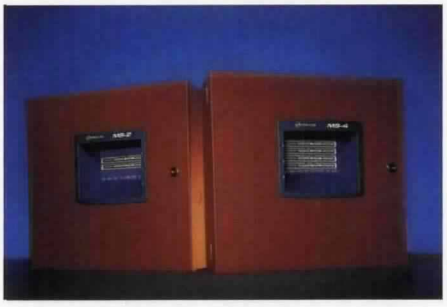
The Viking Corporation, a global leader in the manufacture of fixed fire protection devices, introduces a new K-14 (20,2 metric) Extended Coverage, Ordinary Hazard (ECOH) Pendent Sprinkler. This sprinkler produces the flows required to meet Ordinary Hazard density requirements at lower pressures than 8.0 or 11.2 (11,5 or 16,1) K-factor sprinklers. Additionally, with its extended coverage capability, this sprinkler is ideal in large open-type occupancies, such as shopping malls or other retail structures. For more information www.vikingcorp.com.
CIRCLE CARD NO. 111

FLOW SWITCH TESTER

Tyco Fire & Building Products, a business unit of Tyco Engineered Products & Services, recently announced the introduction of the Zonecheck® flow switch tester to the fire protection market, providing a less-costly and more reliable means of fire sprinkler system alarm testing. As mandated by the NFPA 25, Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, wet fire sprinkler system flow switches must be tested on a quarterly basis. The Zonecheck flow switch tester performs quarterly flow switch tests



through a simple key switch operation that reduces testing time and allows for multiple zone key-switches to be operated from one master. Installed directly onto the pipe housing the flow switch, the Zonecheck simplifies testing by re-circulating the water within the pipe around the flow switch, simulating the flow of one fire sprinkler in operation, and causing the actuation of the flow switch. For more information, visit www.tyco-fire.com.
CIRCLE CARD NO. 110



CONTROL PANEL

Fire-Lite Alarms announces their MS-2 and MS-4 Fire Alarm Control Panels. The MS-2 and MS-4 offer automatic strobe synchronization of audio/visual devices, which enables the control system to perform in compliance with ADA standards, minimizing noise and undue disturbance by ensuring that strobes flash simultaneously. These panels also feature the "EZ Walk Test," which simplifies testing and maintenance and makes inspection easier. In addition, the MS-4 allows for an optional Class-A-Converter (CAC-4) module, which provides for Class A wiring when necessary. While both operate at 24 volts with 3 amps of total power on board, the MS-4 is also capable of supplying a total of 6 amps with an optional transformer.
CIRCLE CARD NO. 113

THERMAL IMAGING CAMERA

International Safety Instruments (ISI), the company that introduced the first BST thermal imaging cameras for firefighters, has released a next-generation thermal imager featuring instant-on responsiveness, longer battery life, greater resiliency and simplified operation.

The ISI 2500 Thermal Imager is the latest product innovation from the manufacturer of technologically advanced respiratory protection and thermal imaging equipment. Operational in three seconds, the handheld ISI 2500 is ready when the firefighter needs it most. The ISI 2500 can be further enhanced with options including an innovative remote LCD screen and telescoping pole, allowing the firefighter to search hard-to-reach areas such as attics, basements and confined spaces without personally entering the hazardous environment. More information, call (888) 474-7233.
CIRCLE CARD NO. 112

Thank You for Attending the Fall Education Conference

The 2004 NFPA Fall Education Conference in Miami Beach proved to be a rewarding and enjoyable experience for all.

A highlight of this event was the featured presentation given by Emily Walker of Citibank and Bill Raisch of NYU's International Center for Enterprise Preparedness. Both presenters were involved with the 9-11 Commission, and their session concerning the commission's report and private sector preparedness was particularly compelling.

The Fall Education Conference was an excellent forum for networking. Attendees were able to discuss shared interests with professionals from across the country and around the world.

Bring the learning back to your facility! Audio recordings of the education sessions are available for purchase in cassette, CD and MP3 formats. Visit *www.nfpa.org/meetings* for details.

NFPA World Safety conference & exposition®

Las Vegas 2005

2004 marks the end of the Fall Education Conference as a stand-alone event. Beginning in June of 2005, the Fall Education Conference will be merged into the NFPA World Safety Conference & Exposition®. The benefits of this merger include:

- More education sessions
- The chance to network with thousands of your peers
- An exposition with more than 250 leading solution providers

*Log onto **www.nfpa.org/meetings** for details and to register for the 2005 NFPA World Safety Conference & Exposition.*

NFPA®

ADINDEX

CLASSIFIEDS

INSTRUCTOR

Butte College-Oroville, CA-Construction Inspection Technology Instructor. $37,517 to $67,612. Email HumanResources@butte.edu. Visit our Web site at www.butte.edu.
(800) 933-8322; TDD (530)895-2817 EOE

FOR SALE

NEVER USED - GREAT PRICE! 9 Units #TOTO3648. Total PAC Double Interlock Preaction System. Contact: Garry Melamed - Telesource Equipment @ 954-342-5001.

TOO MUCH CLUTTER IN YOUR OFFICE? The NFPA Library seeks copies of out-of-print NFPA and NBFU original documents to complete its archival collection. Remember the library if you have items to donate!

MAIL CALL CONTINUED FROM PAGE 9

The investigators might well be right in concluding dust explosion behavior, but did they consider the alternative? The smoke explosion behavior invoked herein is of course well documented in sources including the monumental 1984 tome by the late P.C. Bowes of the Fire Research Station, UK. He makes the point that if, in a "spontaneous heating test" for a wood or a coal in a laboratory oven, smoke is being released for the operator to open the oven door is dangerous because of a possible smoke explosion; he or she should wait until smoking ceases. In such tests combustion propagation is by smoldering and the similarities with the incident under consideration are obvious.

J.C. JONES
University of Aberdeen, UK

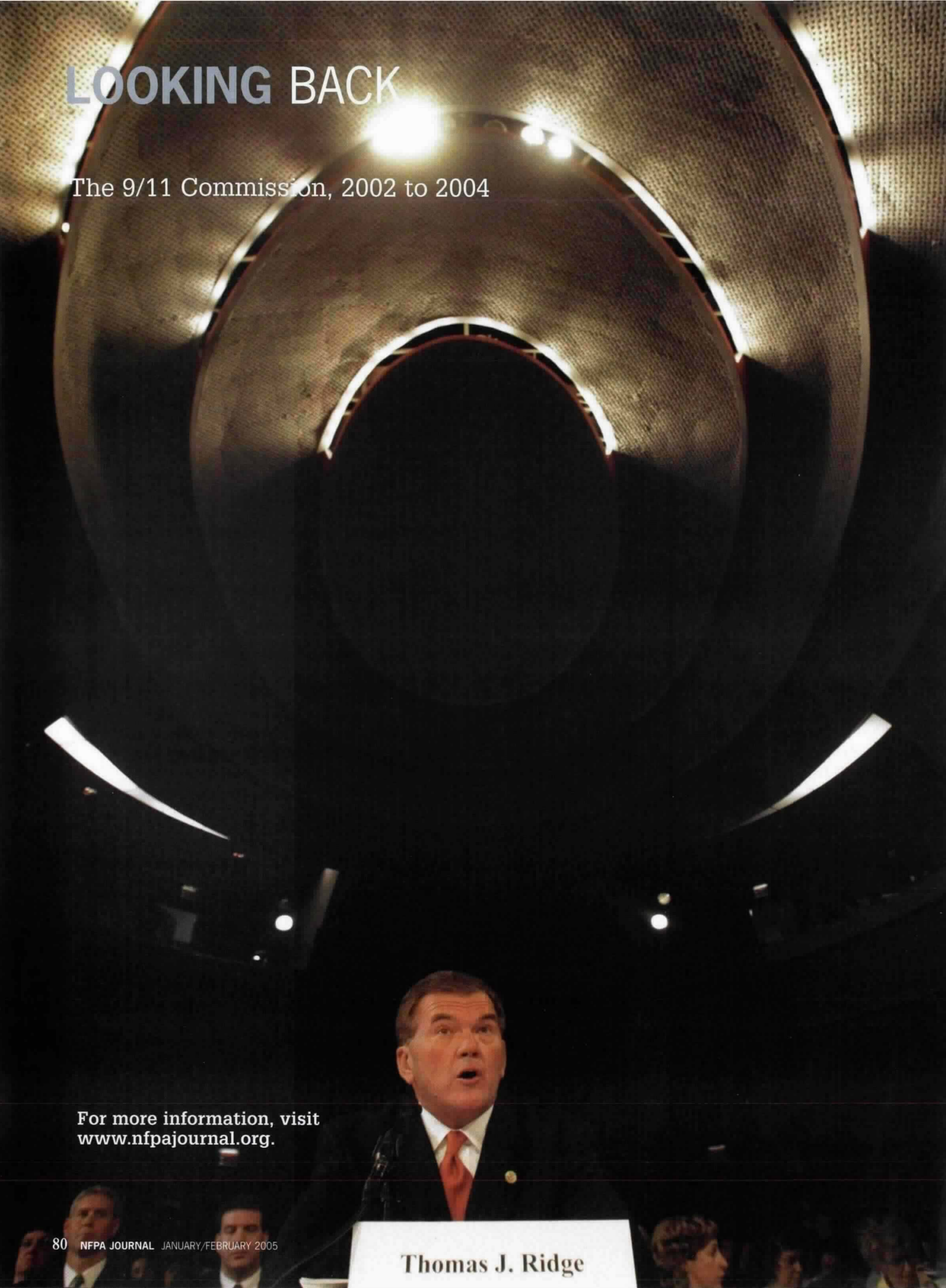
HOW TO CONTACT US

We welcome your letters, comments, and story suggestions. Please send your information to:

NFPA Journal
One Batterymarch Park
Quincy, MA 02269-9101

LOOKING BACK

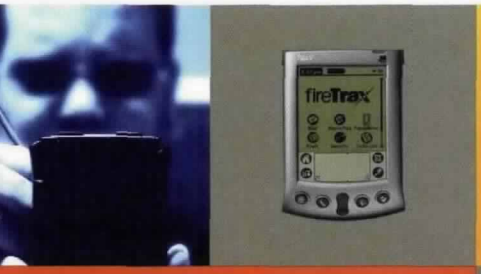
The 9/11 Commission, 2002 to 2004



For more information, visit www.nfpajournal.org.

fireTrax®

the paperless fire safety management system



FIRETRAX THE INDUSTRY STANDARD MAINTENANCE PLATFORM

The fireTraX System – Some Key Features.

Originally Designed to comply with Australian standards Adopted to NFPA Standards and the International Building Code

FireTraX is an integrated Maintenance Management System which ensures that the maintenance of fire protection equipment is carried out according to contracted arrangements and the relevant NFPA and IBC requirements. Organizations and managers responsible for fire equipment maintenance are under increasing pressure to ensure that all such maintenance is not only carried out, but that accurate and auditable records are maintained.

FireTraX now provides the solution.

- Developed and proven in the Australian market.
- Pre-defined maintenance requirements as per NFPA
- Recording of data on site, installed equipment and contracted levels of maintenance.
- Recording and tracking of assets.
- Generation and tracking of Service Call Requests.
- Enables facilities to view, maintain and plan schedules for programmed maintenance activities.
- Production of electronic inspection sheets with current defects list.
- The ability to record the results of maintenance activities including who did it, when it was done and details of any faults or deficiencies found.
- Automatic generation of service requests for faults found during maintenance.
- Production of detailed and summary reports on all maintenance activities suitable for use by both facilities management and clients
- full accountability and verification reports for instant issue to clients, property owners and insurers
- Complete and comprehensive defect reporting of all products installed.
- Integration of handheld data capture devices for use by field personnel to support service, programmed maintenance and other on-site activities.
- Scalable product supporting single or multi-user environments.
- Operates on any Microsoft Windows 32-bit platform.
- Configurable Program of Maintenance "Walk Routes".
- The ability to issue a Follow-up Service Request from the Field
- Issue of Annual Fire Safety Inspection Certificate
- Issue Certified Test Station Certificates in accordance with Section 173.34, Title 49 CFR

fireTrax

For further information contact:
TraxSoftware - USA toll-free at
(866)-942-TRAX
send inquiries to
info@firetrax-usa.com
or visit the web site at
www.firetrax-usa.com

Circle 024 on Reader Service Card

Kidde Fire Systems

Are you concerned about selecting the right fire protection solutions?

Rely on Kidde for the right system.

Whether you're protecting a process control room, a paint spray booth, a marine engine space, a restaurant kitchen or a mining shovel, special risks present special fire protection challenges. That's why you need a Kidde solution. We help you analyze the fire risk, select the right agent and design the best configuration of detection, alarm, control and actuation components. The result is an approved system that offers the highest level of 24/7 fire protection performance... installed and serviced by a global network of Kidde Fire Systems professionals.

Start by getting a free copy of our Kidde PROTECT-SPEC electronic guide to special risk fire protection.

1-800-872-6527, ext. 2606
1-508-881-2000, ext. 2606
kiddefiresystems.com

Kidde. *We've Got It All.*

Circle 013 on Reader Service Card