

JOURNAL nfpa

THE SOURCE FOR FIRE, ELECTRICAL, BUILDING, & LIFE SAFETY INFORMATION

Firefighter
Injuries
2002 NFPA STUDY

Skyscraper
Safety
WHAT'S NEW
SINCE 9/11

Russian
Renovation
RESTORING
THE HERMITAGE

Lost Art
HISTORICAL
AND CULTURAL
LOSS IN NYC

Case Study
FIRE PROTECTION
IN COLONIAL
WILLIAMSBURG

THE FUTURE OF

CODE WRITING

Can the voluntary code-development
process survive the latest legal
assault on copyrights?

JANUARY/FEBRUARY 2003

WWW.NFPAJOURNAL.ORG



tyco

Safety
Products

We Deliver the Complete Foam Package.

• R & D Testing



• Distributor Support

• Field Start-Up Assistance



• Complete FOAM
Hardware Line

• Drawing and Spec Approval

• Application
Design Assistance

• Quotations



• Classroom
Training

• Complete FOAM
Agent Line



• Dedicated Regional
FOAM Managers



Get Your Complete FOAM Information Package
- including Brochure, Application/Design CD and
High Expansion FOAM Video:

800-346-FOAM or 715-735-7411

ANSUL
Experts In Global Fire Solutions

ISO 9001 Registered

www.ansul.com

Circle 002 on Reader Service Card



Bosch is Security

Experience...Innovation...World-class service. Get it all from Bosch Security Systems. We've combined the best of Detection Systems, Radionics and Philips CSI with the 100-year tradition of Bosch excellence. We proudly offer proven security solutions for any application with our high-quality lines of intrusion, fire, CCTV and access control products. Looking for reliable security solutions? Bosch is security. **Security you can rely on.**

For more information, call 800-289-0096 or visit www.boschsecurity.us.



Security Systems

BOSCH

If you could safeguard your entire facility with just one phone call, you'd be smiling too.



Welcome to OneStop™ Solutions Integration from SimplexGrinnell.

Our OneStop delivery model offers a complete single-source solution from the world's largest systems integrator of fire, security, communications and healthcare systems.

As a Tyco company, SimplexGrinnell protects your people, property and assets with the best brands and the best technology the industry has to offer. Here's just a sampling of the products we have available. Simplex® and Autocall® fire detection and alarm systems. Grinnell® fire suppression systems. iSecure™ Pro and other advanced integrated access control systems. Executone® and Zettler® healthcare communications systems. And integrated ProLogic® controllers for criminal justice facilities.

Better yet, you get world-class integration and support services from a North American network of NICET-certified field specialists who'll stop at nothing to ensure your success.

There simply isn't a better way to leverage today's leading-edge technology and achieve the unsurpassed facilities management, asset protection, and cost containment you're looking for.

Now *that's* something to smile about.

How can OneStop™ help you?

Find out by calling **1-800-746-7539**
(in Canada: **1-800-565-5400**) or visiting
www.simplexgrinnellonestop.com

tyco

Fire &
Security

SimplexGrinnell

Protecting People, Property and Peace of Mind™

Circle 017 on Reader Service Card

34

FEATURES

COVER STORY

Anybody's Guess 34

With lower court rulings and a pending Supreme Court decision, the future of code writing remains unclear.

by Alisa Wolf

Bringing Colonial Up to Code 40

In Colonial Williamsburg, safety officials have successfully balanced fire protection with historic preservation, allowing an important part of U.S. history to survive the test of time. by Pam Weiger

Inside the Hermitage 46

Fire safety officials work to overcome the challenges of protecting Russia's Hermitage Museum and its priceless treasures. by Hallie Ephron Touger

Lost Art 52

On September 11, 2001, America's loss extended beyond the overwhelming death toll to include countless artistic and historical treasures that can never be replaced.

by Bill Flynn

Build-by-Numbers 58

A traditional approach to high-rise safety is still the best approach. by John Paradise

2001 Firefighter Injuries 62

The majority of injuries occurred when firefighters were fighting fires, while more than 17 percent occurred at non-fire emergencies. by Michael J. Karter, Jr. and Joseph L. Molis

COLUMNS

Meetings 17

by Brian Benstock

Building to Code 19

by Jerry Wooldridge

Heads Up 20

by Russell P. Fleming

Structural Ops 22

by Sanders & Klaene

Just Ask 24

by Dana Haagensen

In Compliance 26

by Chip Carson

Inside the Beltway 28

by Stephen Barlas

Buzzwords 30

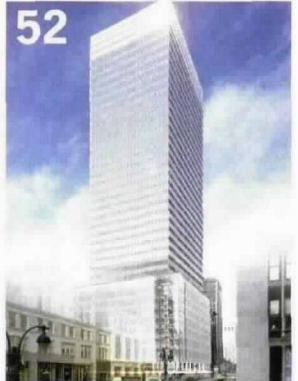
by Wayne Moore

Ins and Outs 32

by Jenna Padula

Outreach 33

by Meri-K Appy



DEPARTMENTS

First Word 6

by James Shannon

In a Flash! 11

by John Nicholson

Firewatch 14

by Kenneth Tremblay

Section News 66

Datebook 78

Classifieds 79

Looking Back 80

COVER PHOTOGRAPH: STOCKBYTE

Copyright © 2003 NFPA. All rights reserved. PRINTED IN USA. *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, One Batterymarch Park, 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.

NOTICE CONCERNING ADVERTISING

NFPA reserves the right to accept or reject any advertisement submitted for publication in *NFPA Journal*. However, NFPA doesn't attempt to investigate or verify claims, including claims of compliance with NFPA codes and standards, made in advertisements appearing in *NFPA Journal*. The appearance of advertising in *NFPA Journal* in no way implies endorsement or approval by NFPA of any advertising claims or of the advertiser, its product, or services. NFPA disclaims any liability whatsoever in connection with advertising appearing in *NFPA Journal*.

JOURNAL nfpa

Volume 97/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

Director of Marketing and Sales

Tom R. Fitzpatrick

Advertising Traffic Manager

Dorinda Ferguson

Advertising Systems Manager

Susan Richard

Online Advertising Manager

Julie Laatsch

Advertising Sales Assistant

Maureen Kean, (617) 984-7520

Advertising Coordinator

Lynne Grant

Advertising Sales Offices

New England

Merrie Lynch
CEL Associates
(781) 848-9306
Fax (781) 848-2063
merrie@quik.com

Southeast

Blake & Michelle
Holton
Holton Enterprises
(407) 971-6286
Fax (407) 971-8598
bholton@cfl.rr.com

Texarkana

Jason Bullock
Bullock Publishing
Associates
(281) 485-4077
Fax (281) 485-1285
gpcpa@aol.com

Midwest

Tom Fitzpatrick
T.F. Marketing
Associates
(630) 482-3394
Fax (630) 482-3396
tfmark@flash.net

Mountain States

Cynthia Louis
Roy McDonald
Associates
(970) 223-3911
Fax (970) 223-3991
denver@roymcdonald.com

Southern California

Michael Cosenza
Roy McDonald
Associates
Cell (562) 400-0158
Fax/Office (562) 920-9779
michael@roymcdonald.com

Northern California

Ian McDonald
Roy McDonald
Associates
(510) 832-6300
Fax (510) 832-6302
ian@roymcdonald.com

Pacific Northwest

Jim Olsen
Roy McDonald
Associates
(503) 640-2011
Fax (503) 640-3130
portland@roymcdonald.com

Latin America

Maira Caballero
(592-2) 792-375
Fax (592-2) 792-375
maira@ceibo.entel.net.bo

ABOUT NFPA

NFPA has been a worldwide leader in providing fire, electrical, building, and life safety 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 email 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 email 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% 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, P.O. Box 9101, One Batterymarch Park, Quincy, MA 02169



NFPA OFFICERS

Corinne Broderick, Chair
Executive Vice President,
Massachusetts Medical Society

George Ockuly, 1st Vice Chair
Chesterfield, MO

Warren E. McDaniels, 2nd Vice Chair
New Orleans Fire Department

Paul M. Fitzgerald, Treasurer
Holliston, MA

Vinnie Bollin, Secretary
International Association of
Firefighters

James M. Shannon, President and
CEO, NFPA

Arthur E. Cote, Executive Vice
President, NFPA

Bruce Mullen, Sr. Vice President,
Finance, Chief Financial Officer, NFPA

Dennis J. Berry, Assistant Secretary

Board of Directors

The president, the elected officers, and:

Martin H. Reiss, Past Chair
President and Chief Executive Officer,
The RJA Group Inc.

Term Expires in 2003:

Dan Bailey, Staff Officer, USDA Forest
Service, Northern Region

Dennis Compton, Fire Chief, Mesa, AZ

Mary Corso, Washington State Fire
Marshal

Tom Jaeger, President & CEO,
Gage-Babcock & Associates, Inc.

Louis Jekel, Jekel & Howard LLP

Fred Leber, CEO,
Leber Rubes Consulting Engineers

Term Expires in 2004:

Philip C. Stittleburg, Fire Chief,
La Farge, WI, Fire Department

Ronald Bertone, Bertone Associates

H. Wayne Boyd, President and CEO,
U.S. Safety and Engineering Corp.

Martin J. Maddaloni, General
President, United Association of
Plumbers, Pipefitters, and
Sprinklerfitters

Jaime Moncada-Perez, President,
Pirotec, Limited

Term Expires in 2005:

S. Joe Bhatia, COO and Executive
Vice President, Underwriters
Laboratories

Robin Paulsgrove, Chief,
Arlington, Texas, Fire Department

Russell Fleming, Vice President of
Engineering
National Fire Sprinkler Association

Steve Muncy, President
American Fire Sprinkler Association

Todd Gritch, Architect/Construction
Official, HKS, Inc.

Douglas P. Forsman, Fire
Chief/Consultant, Union Colony
Fire/Rescue Authority, CO

Luther L. Fincher, Jr., Fire Chief
Charlotte, NC, Fire Department

NOTICE CONCERNING CONTENT

The content of articles contained in NFPA Journal solely reflects the personal opinions of the authors or contributors and doesn't necessarily represent the official position of NFPA, which, as to the meaning and intent of NFPA codes and standards, can only be obtained through NFPA's published procedures for requesting formal interpretations.

Contents must not be reprinted without the written permission of NFPA. NFPA Journal is a registered trademark of NFPA.

2001, 2002 SNAP
AWARD WINNER



2001, 2002
AWARD WINNER



2002 AWARD WINNER



Introducing the
Altronix®

4x4's

POWERFUL, RUGGED, VERSATILE...

AL1042ULADA
NAC Power Extender
10 amp @ 24VDC

*Jumbo Enclosure
Enables Ease of Wiring
18"H x 14.5"W x 4.625"D*

AL842ULADA
NAC Power Extender
8 amp @ 12/24VDC

AL642ULADA
NAC Power Extender
6.5 amp @ 12/24VDC

THE ULTIMATE IN LSUV's (Life Safety Utility Vehicles)

Standard Equipment Includes:

- ✓ Four (4) Class A or Four (4) Class B Indicating Circuit Outputs.
- ✓ 1 amp Continuous Aux. Output (Battery Backed Up).
- ✓ 1 amp Continuous Aux. Output (Non-Battery Backed Up).
- ✓ Signal Circuit Trouble Memory.
- ✓ Built-in 2 wire Horn/Strobe Sync Protocols.
- ✓ Lifetime warranty.



Making It Work.™

ISO 9001:2000 Registered Firm

888.258.7669 • 718.567.8181 • fax 718.567.9056 • www.altronix.com • info@altronix.com

Circle 001 on Reader Service Card



THE AMERICAN SYSTEM for developing model codes and standards has, over the last century, benefited the public enormously by advancing health and safety. What makes this system truly remarkable is that these requirements are developed by private, nonprofit organizations such as NFPA and made available for adoption to the private sector and the government at the federal, state, and local levels.

Although the development of high-quality



ity codes and standards is costly, organizations such as NFPA don't rely on government funds. Instead, U.S. standards developers fund the development of codes and standards, including staff, overhead, production, and promotional costs, through the sale of the copyrighted documents. The public gets the best the public and private sectors have to offer in protection, and the government is relieved of the burden and cost of developing these crucial materials themselves. And all of us reap the benefit of the standardization that's so important, not just to protect the public but to keep the U.S. economy strong.

That system could be destroyed because of a case that the U.S. Supreme Court is considering taking up sometime this year. The case, *Southern Building*

Code Congress v. Peter Veeck, d.b.a. Regional Web, has already been decided by the Fifth Circuit Court of Appeals in a decision that flies in the face of decades of U.S. copyright law (see a detailed description of the case on page 34). By holding that any code or standard a jurisdiction adopts enters the public domain, the Fifth Circuit Court has denied the organization that developed that document the exclusive right to benefit from ownership of the copyright.

At NFPA, we're working with these other organizations to make the strongest case possible in the Supreme Court because we're committed to *doing everything* we can to disseminate the vital information we develop to save lives. We've always made our codes and standards widely and easily accessible at reasonable cost, and we've recently announced major new programs to make NFPA documents available for public review on the Internet at no charge, while still protecting our copyrights.

The Biggest Obstacle NFPA Has Ever Faced?

In its decision, the Court of Appeals suggested that the costs of code development might be borne by the industry groups that use them. This shows how little the court understood how codes and standards are developed in the United States. Code developers, NFPA included, don't look out for the interests of any single group when we do our work. In fact, our rules, accredited by the American National Standards Institute (ANSI), require that no group dominate at any point in our process.

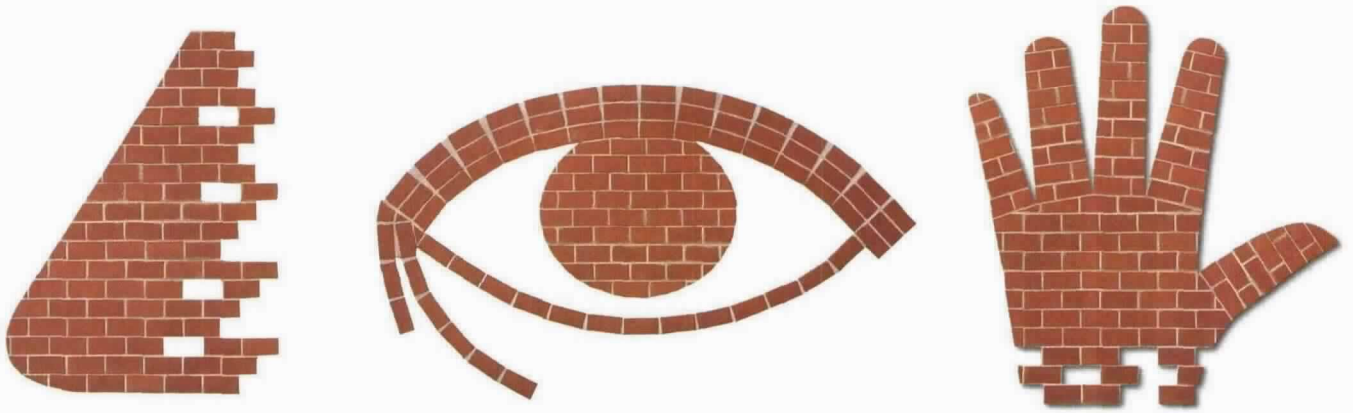
These required balances and the other provisions in our rules requiring fair and unbiased processing of all proposals are the key to our credibility as an organization that looks out for the public interest. In adopting codes and standards developed in a consensus process such as ours, governmental bodies achieve uniformity with other jurisdictions based on broad participation of all interested parties.

If the Supreme Court upholds the lower court decision in the Veeck case, this whole system will be severely impeded. In essence, our copyrights, which have been the principal source of the funds we've needed to fulfill our mission for the last century, will lose much of their value. Other, similar organizations on which the public relies will be in the same position.

The Veeck case, which has attracted little attention outside the world of codes and standards developers, could have a very big impact on the lives of everyone in the United States and all those around the world who benefit from the work we do. In fact, the Veeck case could pose the biggest obstacle NFPA has ever faced in our fight to save lives and property since our founding in 1896.

We will keep you informed as this case develops.

James M. Shannon
President, NFPA



You Have Five Senses. Your Building Should Have At Least Three.

Why compromise your fire design by installing a system that is limited to single element detection? Signature Series multi-sensor technology provides unsurpassed detection for the full spectrum of fires. Our Signature Series 4D intelligent detector utilizes Photoelectric, Ionization and Thermal sensors to provide a synergistic decision coupled with the fourth element—time. The results: faster response times and a decrease of nuisance alarms.



In almost every retrofit project, Signature Series devices utilize existing fire detection wiring, minimizing the cost of installation. Broad spectrum fire protection, lower installed cost and EST quality: that's Signature Series 4D. Your choice for the best in fire detection technology.

To find out more about why designing with EST Signature Series makes perfect sense, call 1-888-EST-2DAY. We'll show you the value of multi-sensor detector technology.



World leader in fire alarm technology.

www.est.net/nfpa

Circle 006 on Reader Service Card

PELICAN™



That's why God gave you two hands.

It's not a matter of choice. These are the tools of the trade. But unlike most tools, these serve a higher purpose.

The unbreakable ABS body on the Pelican™ Super SabreLite™ can take the abuse that comes with the territory. Beat it. Drop it. Break a window with it. It'll keep on shining. Plus, it will last a lifetime and that's our unconditional guarantee: Pelican™ will repair or replace your flashlight as long as you own it.

The tightly focused collimated beam cuts through thick smoke to lead you in... and show you the safe way out. And, with more safety approvals than any other flashlight, it's one less thing to worry about in a hazardous environment.

The Super SabreLite™. It's Firefighting 101.



23215 Early Ave., Torrance, CA 90505
Tel 310.326.4700 • Fax 310.326.3311 • www.pelican.com
All trademarks and logos displayed herein are registered and unregistered trademarks of Pelican Products, Inc. and others.

THE PELICAN UNCONDITIONAL LIFETIME GUARANTEE

Circle 005 on Reader Service Card

FIREFIGHTER FATALITIES REPORT

I just read the "Firefighter Fatalities, 2001" article [July/August 2002 issue] with respect to vehicle crashes...I live and work in Tucson, Arizona. We have a good fire department and one of the nation's top training academies, the Tucson Public Service Training Academy, serving police and fire....

In spite of supplying or trying to supply Tucson's firefighters with the best safety and firefighting equipment possible, there's one area that directly influences vehicle crashes, and yet seems to be grossly inadequate in Tucson and...other fire department jurisdictions. That area is notification of the public that an emergency response is under way and the responders are approaching your location.

What am I talking about?...Strobe lights on intersection signals, as well as other notification devices other jurisdictions may use.

The problem is you can't hear the fire vehicles' sirens/horns. I travel with my driver's-side window open a quarter-inch or so from the top. Even on an undivided roadway, with no excessive noise other than normal traffic, and with a fire engine or other fire vehicle approaching with sirens and horns blaring, I don't hear the audible device many times until the vehicle is within one-half block of my vehicle. I have observed [an approaching] fire vehicle [with flashing] lights...as many as five blocks or more [ahead of me]. ...Pulling over, in most cases I don't hear [the siren/horn] if I open the window all the way and even if I put my head outside until the vehicle is about half a block away.

This is much too close to be of much help. Many of Tucson's main streets, with 35- and 40-mph (56- and 64-kph) speed limits, are divided by medians [landscaped with] trees and tall bushes, which effectively block sight of a fire vehicle [traveling toward you] until it's opposite you....

If I am moving at the speed limit—

let's assume 40 mph (64 kph)—and the emergency vehicle is traveling at, say, 50 mph (80 kph), the closing speed is 132 feet (40 meters) per second. If he's half a block away, that gives me roughly 200 feet (61 meters), or about 11/2 seconds to hear the emergency vehicle, determine where it is and what direction it's traveling, decide it's safe to maneuver toward the curb, and stop or take other action.

The problem is much worse for emergency vehicles approaching from the rear. Several times, I have been surprised because traffic has visually blocked my rear view, and I don't hear the vehicle until it is on top of me.

Are there any research projects under way about audibility for emergency vehicle horns/sirens?

If you have any information, please...contact me.

Frank Elliott

City of Tucson's Department of Operations
A/E Division Project Manager
Felliott1@ci.tucson.az.us

ERRATA

FIRE LOSS/LARGE LOSS

Due to an editing error, the figure for the total cost of large loss fires was listed at \$44 billion in the November/December 2002 issue. The correct figure is \$34.4 billion.

We apologize for the error and any confusion it may have caused.

MEETINGS CORRECTION

In the "NFPA Meetings" section of the November/December 2002 issue of *NFPA Journal*, the documents listed were not up for adoption at the 2002 Fall Education Conference. Rather, they are up for adoption at the 2003 World Safety Congress and Exposition™.

We apologize for any confusion this error may have caused.

The Choice Is Abundantly...

C L E A R

LEAN **OW** **PA** **BC** **RELIABLE**

GW P **A P P R O V E D** **R A T E D**


HALOTRON™ I

Fire Extinguishing Agent

Distributed By:

<p>Amerex Corporation Trussville, Alabama, USA 205-655-3271 • Fax 205-655-3279 Web Site: http://www.amerex-fire.com</p>	<p>Badger Fire Protection Charlottesville, Virginia, USA 800-446-3857 • Fax 434-973-1589 Web Site: http://www.badgerfire.com</p>
<p>Buckeye Fire Equipment Co. Kings Mountain, North Carolina, USA 704-739-7415 • Fax 704-739-7418 Web Site: http://www.buckeyefire.com</p>	<p>Kidde Safety Mebane, North Carolina, USA 800-654-9677 • Fax 800-547-2111 Web Site: http://www.kidde.com</p>

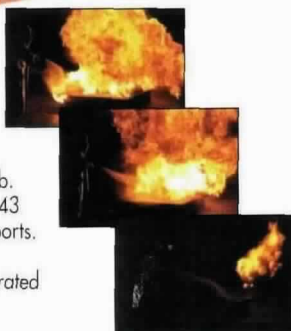

65 lb. (29.5 kg) and 150 lb. (68 kg)
UL Listed Wheeled Units are also available




BUCKEYE
150 lb. HALOTRON™ I

BUCKEYE
65 lb. HALOTRON™ I

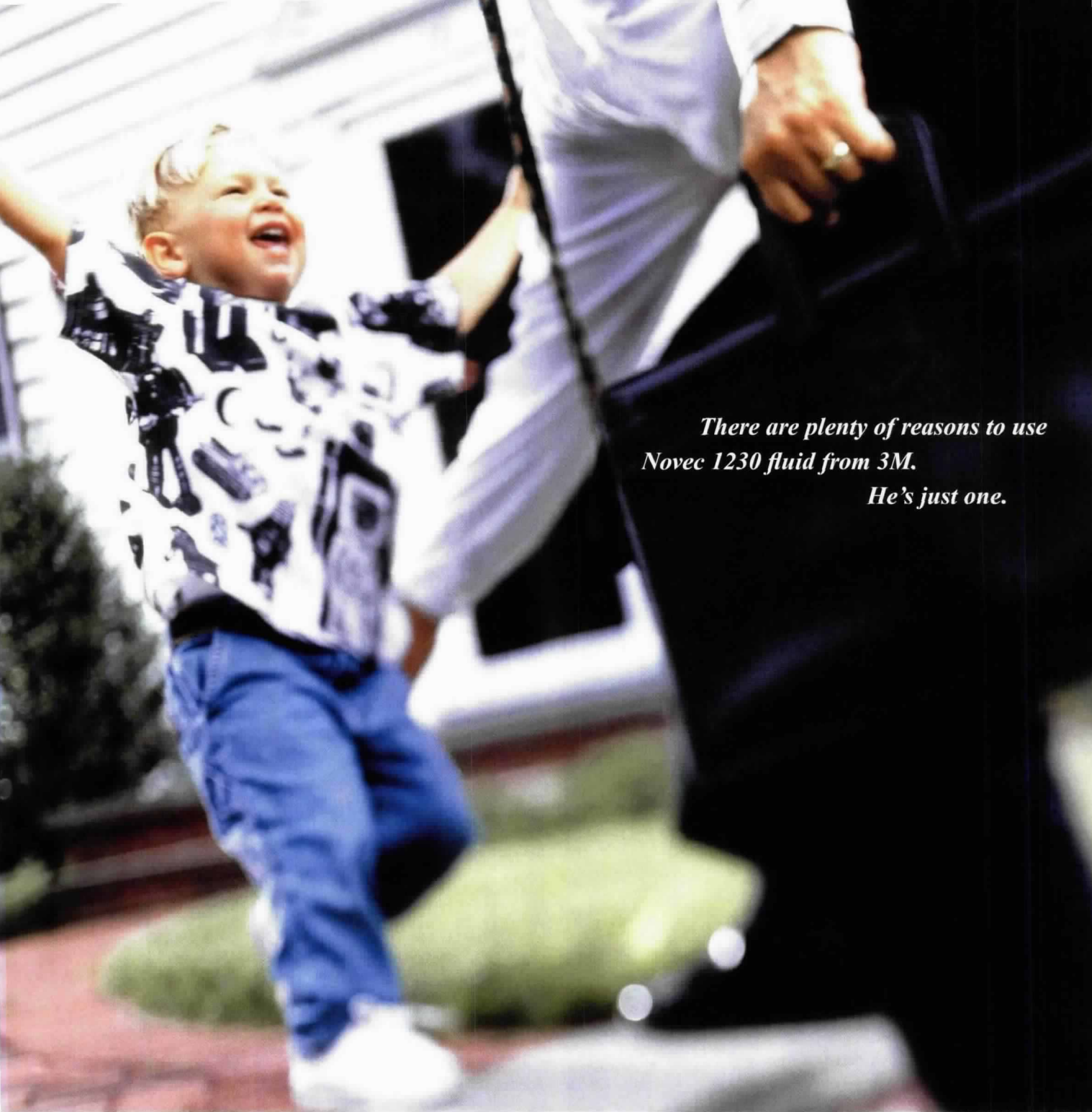
- U.S. FAA Approved for Airport Fire Fighting (Cert Alert 95-03).
- Installed in 200-500 Lb. Systems at more than 43 U.S. International Airports.
- Complete Line of High Performance UL Listed A, B, C rated portables from four U.S. Manufacturers.
- Available in High Performance UL Listed Wheeled Units 65 Lbs. (29.5 kg) - 150 Lbs. (68 kg).
- Available from Distributors outside the U.S. including: Matafuegos Donny (Argentina); PT Chubb Lips (Indonesia); Palmer Asia (Philippines); Lingjack (Singapore) and Korean Pacific Corporation (Korea).

American Pacific Corporation, Halotron Division
LAS VEGAS, NEVADA / CEDAR CITY, UTAH, USA
702-735-2200 • FAX 702-735-4876
WEB: halotron-inc.com • E-MAIL: halotron@apfc.com



Circle 008 on Reader Service Card

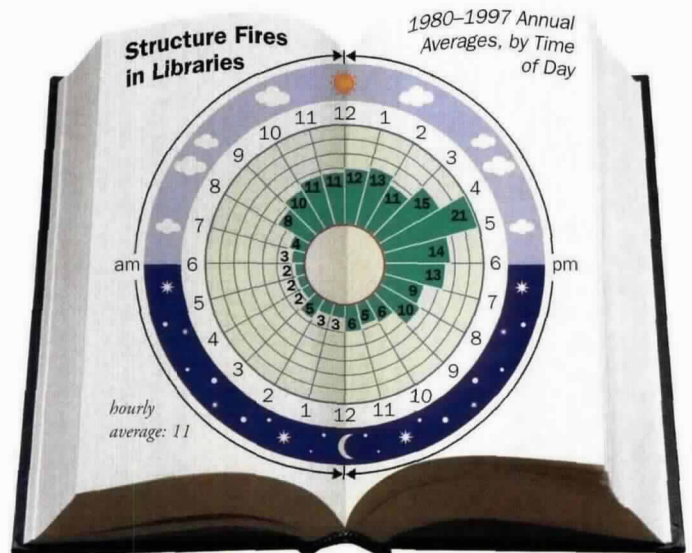
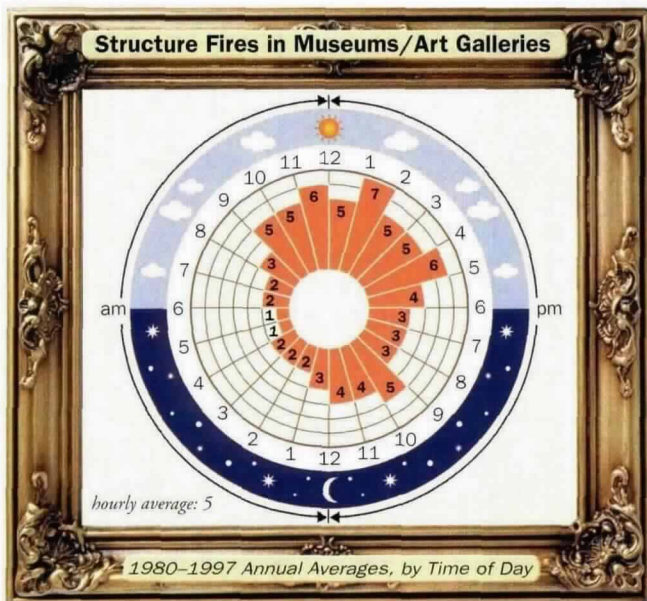


*There are plenty of reasons to use
Novec 1230 fluid from 3M.
He's just one.*

Introducing 3M™ Novec™ 1230 Fire Protection Fluid—the new standard for halon replacement. Protect what matters most with Novec 1230 fluid. It's the long-term, sustainable clean agent that has the greatest margin of safety of halon replacements. Ideal for use in occupied spaces, it protects high-value assets, has zero ozone depletion potential, a global warming potential of one and a five-day atmospheric lifetime. Novec 1230 fluid not only meets today's regulations but those of the foreseeable future. It is easy to handle and store, and is available for use in streaming and flooding applications. To view or download product information, visit our Web site at www.3m.com/novec1230fluid. Or call 800-632-2304 in the U.S. or 32 3 250 7874 in Europe. Created for life.

3M *Innovation*

Circle 003 on Reader Service Card



Property loss in cultural facilities

by John Nicholson

FIRES ARE THE SINGLE greatest cause of property loss in cultural facilities worldwide. The United States currently averages 89 museum fires per year and 198 library fires, with an annual property loss of more than \$2 million and \$4.9 million, respectively. From 1980 through 1997, the annual average, based on time of day, was five fires per hour in museums and art galleries in the United States and an average of 11 fires per hour in U.S. libraries.

NFPA's 1999 study of the causes of fires indicates that, among those that occurred in museums, approximately 22 percent were caused by electrical systems. The rest were the result of arson, which was responsible for 18 percent; heating equipment, responsible for 8 percent; cooking

equipment for 7 percent; open flame or torches for 9 percent; and other equipment, responsible for 11 percent.

Thirty-nine percent of library fires were arson fires, 19 percent were electrical fires, heating equipment started 5 percent, torches or open flames started another 5 percent, and 7 percent were started by other equipment.

The impact of such fires can include the destruction of the institution, extended periods during which the institution is closed to the public, a major loss of capital, and the loss of the collection for exhibits and research. In addition, there's the loss of the burned objects, fire and smoke damage to the building, and a decline in confidence in the institution and its management, leading to a decline in donations. The institution

may become notorious among the public, its insurance rates may rise, and exhibit loans from other institutions may dry up.

In her paper "Fire Protection 201," fire protection consultant and NFPA Cultural Resources Technical Committee Chair Deborah Freeland writes:

"The need to provide better protection for our cultural properties is evident. However, the practical issues of how to accomplish this can be daunting while balancing budget constraints, different levels of risk, and a flood of information on new products and technologies."

She notes, however, that "using a risk-based approach to fire protection that weighs the various alternatives and levels of protection against the cost and potential risk, we can achieve this goal."



A man stands next to a house that caught on fire in Oklahoma. Three people died in the fire.

ASSEMBLY Sprinkler controls natural-gas fire COLORADO

A restaurant that was closed for the night suffered minor damage when a single sprinkler controlled a natural-gas kitchen fire. The fire marshal later stated that the sprinklers and other required fire protection features allowed the firefighters into the building quickly by detecting the fire's presence, keeping it to a manageable size, and notifying the authorities.

The single-story, steel-framed building had metal walls and a built-up roof. In addition to the wet-pipe sprinkler system, which was monitored by a central station alarm company, the building had a full-coverage smoke and heat-detector system and a hood system installed over the cooking areas.

Firefighters received a water-flow alarm for the restaurant at 2:17 a.m. and arrived seven minutes later. Using the key in the exterior lock box, they entered the building and found the

sprinkler operating in the kitchen. When they noticed the flames were being fueled by natural gas under a grill, the firefighters called in another engine and quickly extinguished the remaining fire. The two crews shut off the main gas line into the building and the water to the sprinkler system.

Investigators found that a natural-gas line was improperly reconnected to the grill after it had been cleaned. The gas was ignited by a pilot light, but the sprinkler controlled the fire so the

overhead wet-chemical system didn't activate.

After a quick repair and inspection the next day, the restaurant was back in business. Losses were estimated at \$5,000.

HEALTH CARE Nursing home employee extinguishes heater fire NEW HAMPSHIRE

When a malfunctioning electric space heater ignited in a nursing home office, a facility employee activated the fire alarm, located a fire extinguisher, disconnected

Flexible, Expandable, Networkable POWERFUL

Everything You Would Expect From NOTIFIER.



Introducing the power of protection – the Onyx™ 3030
Fire Alarm Control Panel from NOTIFIER.

ONYX
SERIES

One Signaling Line Circuit (SLC) expandable to ten, supporting up to 3,180 devices, the flexible Onyx 3030 takes care of all your fire detection needs. Combined with the backward-compatible Onyx Series network, advanced detection, and voice capabilities, this powerful system is what you want protecting the people of your largest facilities.

The New Onyx 3030 – Everything You Would Expect From NOTIFIER.

For more information visit www.notifier.com or call 203-484-7161 for a local distributor.

Circle 012 on Reader Service Card

 **NOTIFIER**®

A Honeywell Company

the heater, and helped extinguish the fire.

The single-story masonry structure had a tile floor built on a concrete slab and a rubber membrane and ballast covered the metal-deck roof. Some rooms were wood-framed. A central station alarm company monitored the full-coverage fire detection system and dry-pipe sprinklers.

The worker discovered smoke coming from an electric space heater in her office and activated a manual pull station, sounding the fire alarm. She then grabbed a fire extinguisher and pulled the space heater's plug from the wall outlet. A maintenance man responded with another fire extinguisher, and the two emptied both extinguishers onto the burning heater.

The fire had been extinguished before the fire department arrived. No one was injured, and fire losses weren't reported.

MANUFACTURING

Fire started in burglary attempt

CALIFORNIA

Torch-wielding burglars cut through the metal overhead door of a wheel-polishing company and the heat, flame, and slag from the torch ignited combustibles inside the door, starting a fire that spread undetected for about 10 minutes.

The heavy-timber building, which measured 150 feet (46 meters) by 100 feet (31 meters), had concrete block walls and a wood roof covered with asphalt. The unsprinklered single-story structure had a smoke detection system, but it

wasn't functioning.

The business was closed for the night, but the occupant of an adjoining business detected the fire and called 911 at 10:49 p.m. Firefighters arrived and found the fire concentrated in the center rear portion of the building, consuming cardboard barrels filled with 12-inch (30.5-centimeter) cloth polishing wheels. They also noticed that a hole measuring 18 inches by 24 inches (45 centimeters by 61 centimeters) had been cut into the building's rollup door.

The building, valued at \$1.5 million, and its contents, valued at \$500,000, suffered a combined loss of \$250,000. No one was injured.

MERCANTILE

Fire destroys furniture store

FLORIDA

A fire and smoke detection system failed to prevent an early-morning blaze from destroying a furniture store. Flames had spread throughout the store by the time the fire department arrived.

The one-story, steel-framed building, which was closed for the night, had a large open area that contained leather furniture and living room accessories, as well as offices, a break room, and a bathroom. The metal-walled structure, measuring 200 feet (61 meters) by 60 feet (18 meters) had no sprinklers.

A passerby saw the fire in the store and called the fire department at 3:01 a.m. When firefighters arrived, they found the front of the building fully involved in flames and noted heavy

smoke coming from the store. They forced entry through a door and three holes were cut in the walls.

Investigators later found that the fire began on a wooden office table holding a fax machine, a copier, and a credit card machine, one of which malfunctioned and started the fire. Once the fire began, it spread to combustibles in the office, then raced undetected through the store. The building, valued at \$300,000, and its contents, valued at \$200,000, were destroyed. There were no injuries.

RESIDENTIAL

Child killed when overloaded extension cord ignites

KENTUCKY

Two electric space heaters plugged into a single extension cord overheated and started a fire that killed a 3-year-old boy.

The two-story, wood-frame house, which was 50 feet (15 meters) long and 29 feet (9 meters) wide, had an asphalt-shingle roof. A battery-operated smoke alarm had been installed in the first-floor living room, but investigators found that its battery had been removed. The house was unsprinklered.

A passerby noticed the fire and called 911 at 5:24 a.m. Firefighters arrived four minutes later and discovered heavy black smoke coming from the windows. They laid a 5-inch (12.7-centimeter) water supply line, then advanced an 1 3/4-inch hose line with Class A foam to the second floor. After quickly bringing the fire under control, they located the injured child, who'd been trapped in his

second-floor bedroom.

Investigators found that the three-outlet extension cord had overheated, causing the insulation to break down and ignite the carpet at the foot of the boy's bed. The flames then spread to the bedding and engulfed the child, who died of third-degree burns.

Damage to the house, valued at \$42,000, was estimated at \$20,000. Damage to its contents, valued at \$10,000, was estimated at \$4,000. The fire also injured a woman in the house, but the extent of her injuries wasn't reported.

SPECIAL

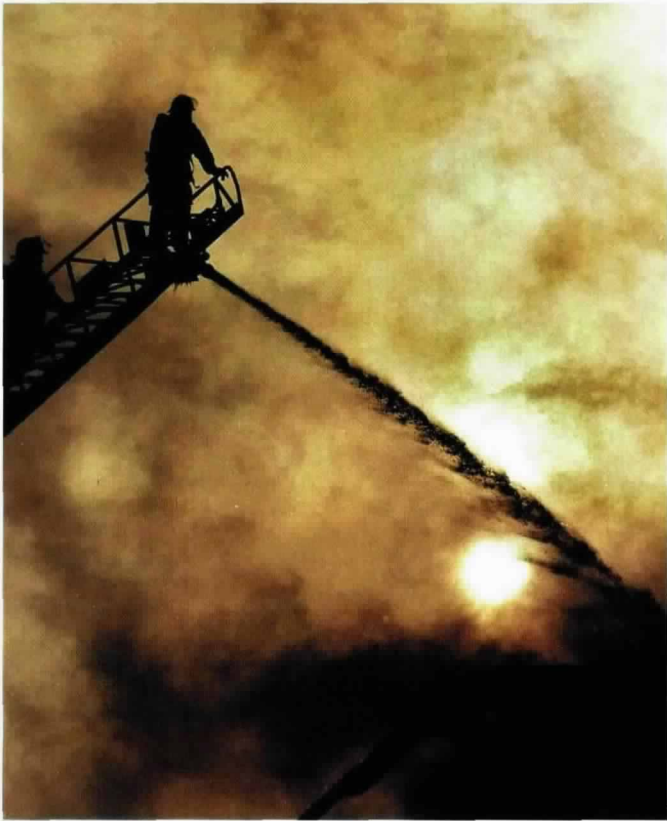
Fire damages courthouse

NEW HAMPSHIRE

A fire that began when a plumber's torch ignited insulation smoldered for hours before it burst into flames, heavily damaging a courthouse under construction. Workers hadn't finished installing the building's fire detection and suppression systems when the blaze broke out.

The two-story, wood-framed building was 112 feet (43 meters) long and 72 feet (22 meters) wide. Parts of its exterior walls were covered in brick veneer, and asphalt shingles covered its roof. Neither the wet-pipe sprinkler system nor the fire and smoke detection system had been activated.

A passerby reported the fire at 4:55 a.m., and firefighters arriving eight minutes later discovered heavy smoke coming from the unoccupied building's eaves. Entering through the front door, they advanced hose lines to the second



Firefighters in a cloud of smoke trained a hose on a burning courthouse in New Hampshire. The courthouse was under construction and due to open in a couple of weeks.

floor, but the heat and heavy smoke prevented them from going any further. The incident commander ordered an evacuation and shifted to a defensive attack after receiving reports the deck looked spongy.

Investigators determined that the fire began on the second floor near the center of the building where workers, who'd been using a plumber's torch to install fixtures, inadvertently ignited soundproofing material, which smoldered undetected for hours before reaching open flame.

The nearly completed building, valued at \$2.6 million, was heavily damaged. There were no injuries.

RESIDENTIAL

Arson fire kills four NORTH CAROLINA

A 21-year-old woman was sentenced to life in prison after admitting she set an apartment building fire to get back at an ex-boyfriend. The fire spread quickly, trapping some residents in their apartments and forcing others to jump from their upper-floor windows to escape. Four people died in the fire.

The first level of the three-story, wood-framed building, which was 75 feet (23 meters) high and 70 feet (21 meters) long, was covered in brick veneer, while the second and third floors were clad in vinyl siding. Each of the building's 12 units had local smoke

alarms near sleeping and living areas, but none was sprinklered. Fortunately, the open construction of the stairwell in the center of the building and the apartments' balconies allowed a fire in any location to spread without destroying every other part of the egress system.

A resident reported the fire at 2:21 a.m., and firefighters arrived four minutes later to find the center stairwell well involved. As crews began deploying ground ladders to begin rescuing upper-floor residents, three residents jumped into firefighters' arms to escape the blaze. When the spreading flames ignited a grass fire that threatened a nearby manufactured-home park, the incident commander quickly struck three alarms to bring additional resources to the scene.

Several mutual-aid companies deployed hose lines around the structure in an attempt to control the fire, while others tried to account for those who'd escaped or been rescued from the building. Firefighters found the bodies of a 25-year-old man, a 25-year-old woman, and two 19-year-old women in the debris when the fire was finally extinguished.

The woman who set the fire poured charcoal lighter fluid on a futon on a second-floor balcony and ignited it. Flames quickly spread into the building and up to the attic, substantially damaging every apartment in the building. The structure, valued at \$600,000, and its contents, valued at

\$200,000, were total losses.

The four victims died of smoke inhalation. Five other residents were burned or suffered traumatic injuries while escaping.

Gasoline fire injures one MISSOURI

A 53-year-old man was burned after he dipped a spark plug he was cleaning into a jar of gasoline in his living room, then used a lighter or cigarette to burn off the build-up. He's reported to have been intoxicated at the time.

The single-family, wood-framed house, which covered 900 square feet (84 square meters), had battery-operated smoke alarms, but there were no sprinklers. The fire wasn't reported until a neighbor saw smoke coming from the house and called the fire department.

Damaged lamp cord starts fatal fire

TEXAS

A 90-year-old disabled man and a 44-year-old woman died in a fire that began when a lamp cord crimped behind a sofa short-circuited and arced, igniting the sofa and living room curtains in their single-family, wood-framed home. Flames then spread up the wall to the ceiling and attic.

The unsprinklered, one-story house had an asphalt-shingled roof and covered approximately 1,000 square feet (93 square meters). It had no fire or smoke detection system.

The alarm was originally thought to be a call for medical assistance, but first-arriving firefighters upgraded their response

PHOTOGRAPH: AP/WIDE WORLD PHOTOS

when they saw smoke coming from the house. Crews brought the fire under control within 29 minutes, but the two victims had already died. Another occupant, a woman, escaped unharmed.

Damage to the house, valued at \$50,000, and its contents, valued at \$20,000, were estimated at \$45,000 and \$15,000, respectively.

Two die in illegal drug lab fire COLORADO

A flash fire blocked the only exit from the basement of a two-family house where methamphetamine was produced with chemicals found in the area of fire origin. Two men escaped from the basement with burns, but two women died of smoke inhalation when they sought refuge in a crawl space.

Only one side of the two-story, wood-framed duplex had a full basement. The other side of the 40-foot by 40-foot (12-meter by 12-meter) house had a crawl space one could enter through an opening in the building's brick exterior walls. There were no smoke alarms or sprinklers.

Firefighters responded to a 9:36 p.m. call from someone in the other unit of the duplex reporting an explosion and fire. After extinguishing the flames, firefighters searched the basement and found the bodies of the two women, both 34 years old. One of the injured men was taken to the hospital, but the other had left the scene before the fire department arrived.

Investigators found a gas-fired water heater and

furnace in the basement utility room, along with a foam mattress, cardboard boxes, chemicals, acids, lab equipment, and camping fuel. They also discovered several extension cords that had been strung together to power a counter-top electric stove that sat on a chest of drawers. They traced the cords back to a breaker panel where they had been spliced and discovered that the electric meter, which the power company had disconnected, had been rigged so the occupants could illegally obtain power. The investigators determined that camping fuel spilled on the floor had ignited and the fire blocked the stairwell and basement windows. Damage to the structure, valued at \$300,000, was estimated at \$125,000.

Damage to its contents, valued at \$150,000, was estimated at \$15,000.

Christmas tree fire kills three OKLAHOMA

A mother and her two young sons were removing a dry Christmas tree from their wood-framed house when the tree ignited, blocking the door. Security bars and storage against another door and windows prevented them from escaping as fire heavily damaged the home.

The two-story, single-family home had a ground-floor area of approximately 1,500 square feet (139 square meters). Its exterior walls were covered with brick veneer, and the roof had asphalt shingles. There were working battery-operated smoke alarms on each floor,



Four people died in this apartment fire in North Carolina. The cause was arson.

but no sprinklers.

The three were dragging the tree out of the house when it touched a gas-fired heater and caught fire. The mother, who was already outside, ran back into the house to rescue her two boys, ages 9 and 10, but the fire blocked their escape route. They were unable to open the other door because stored items were piled in front of it, and security bars with no quick-release lever covered the windows.

All three victims died of smoke inhalation. The house, valued at \$75,000, and its contents, valued at \$25,000, were near-total losses.

Cigarette starts deadly fire MASSACHUSETTS

A 45-year-old man, a 23-year-old woman, and a 13-year-old girl died of smoke inhalation when a cigarette fire destroyed their manufactured home.

The wood-framed structure, which was covered by a metal skin and had a metal roof, was 50 feet (15 meters)

long and 10 feet (3 meters) wide. It had no sprinklers, and the smoke alarm, which might have alerted the occupants to the slow-burning fire, had no battery.

A passerby who noticed smoke coming from the dwelling drove to a nearby store and called the fire department at 3:44 a.m. Two engines and a ladder company arrived six minutes later. Firefighters, who could see fire through the home's windows, forced their way inside and attacked the blaze with hose lines, as flames vented through the windows. With the fire quickly under control, another crew conducted a primary search and found the victims in the bedroom.

The home and its contents, valued at \$5,000, were total losses.

KENNETH J. TREMBLAY is a technical project assistant with Firewise Communities and a career lieutenant with the Lexington, Massachusetts, Fire Department.

CHANGE IS IN the wind at the 2003 NFPA World Safety Conference and Exposition™ (WSCE), to be held at the Dallas Convention Center in Dallas, Texas, from May 18 to 21. The largest event of its kind, the WSCE boasts some exciting new features and a more comprehensive education program that will help

We've also developed a new exhibit hall schedule designed to increase the exposition's value to all participants by providing exhibit hours that don't conflict with education sessions. The new hours are Sunday, 4:30 p.m. to 6:30 p.m.; Monday, 10:30 a.m. to 3:30 p.m.; and Tuesday, 8 a.m. to 11 a.m. Immedi-

Telecommunications and Data Network Protection track.

The new track is designed to bring together fire protection experts in telecommunications and information technology to discuss important factors in protecting today's critical business equipment and networks.

Pre-conference seminars are Friday

Enhancements make NFPA's best show even better

exhibitors and attendees meet their business and educational goals. Not only will attendees benefit from more education sessions, but new exposition hours will provide exhibitors with more traffic in the exhibit hall, as well.

"The ideas for the 2003 NFPA show are fantastic and exciting," says Mark DeBiase of Tyco International. "This concept really demonstrates a passion to differentiate NFPA from any other organization and any other show I've ever exhibited at or attended."

After the Opening General Session on Sunday, May 18, at 2 p.m., attendees and exhibitors are invited to network with colleagues, customers, and prospects at the Grand Opening Reception in the exhibit hall from 4:30 p.m. to 6:30 p.m. This will give you an opportunity to see the newest technologies and services offered by more than 250 exhibitors from the fire protection and life-safety industries, while enjoying beer, wine, and hors d'oeuvres.



ately following the close of the exposition, there will be a Tuesday General Session.

New track offered

Attendees at this year's WSCE will also benefit from more than 100 professional education seminars in nine tracks, including the brand-new

and Saturday and educational sessions run Sunday through Wednesday.

In addition, NFPA members will have the opportunity to vote on codes and standards that help protect people and property throughout the world. Among the documents to be voted on during the Technical Committee Report session are NFPA 403, *Aircraft Rescue and Fire Fighting Services at Airports*; NFPA 30, *Flammable and Combustible Liquids Code*; NFPA 70E, *Electrical Safety Requirements for Employee Workplaces*; and NFPA 2001, *Clean Agent Fire Extinguishing Systems*.

So, mark your calendars now for the 2003 NFPA World Safety Conference and Exposition. You can't afford to miss this event!

For more information, including how to register and exhibit, call (617) 984-7310 or visit us online at www.nfpa.org/meetings and check back often for updates.

See you in Dallas!

BRIAN BENSTOCK is NFPA's exposition marketing manager.



SIEMENS

Fire Safety

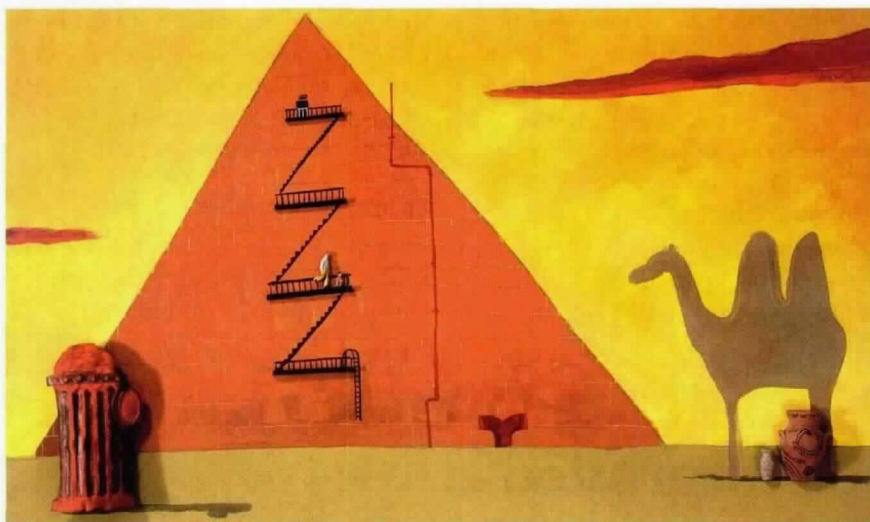
The world's only BIG-SCREEN fire detection system now has "Surround Sound."

Introducing the Siemens FireFinder with VOICE EVACUATION.

Building Evacuation just got better. The Siemens FireFinder System now offers Integrated Digital Emergency Voice Evacuation. The FireFinder XLSV is ideal for highly populated buildings and complexes. It can deliver crystal-clear, multiple and simultaneous messages to various locations, live or prerecorded. The multi-functional, 8-digital-audio-channel XLSV can be used for emergency evacuation and as an everyday building communications system for convenience paging and background music.

Learn more. Call Siemens Building Technologies, Fire Safety Division at 800-222-0108 or visit sbt.siemens.com/fis. Siemens FireFinder with "Surround Sound." You've got to hear it to believe it.

AS CODE OFFICIALS and authorities having jurisdiction (AHJs), we're bound to encounter a repair, remodel, or renovation project that involves a structure of historical significance. It may be the home of a famous person, a school, a courthouse, an opera house, a museum, even something as exotic as a launch control center or Cinderella's Castle. But whatever it is, the stairs will invariably fail to meet the required minimum tread depth or maximum riser height. The corridors won't meet the required exit width. The exit doors will swing inward instead



NFPA 5000™ and historic renovations

of in the direction of exit travel. And above each non-rated, wood panel door will be a transom, cracked open to allow for better air circulation.

How can you ensure the safety of those you're duty-bound to protect while preserving the cultural, social, and political heritage of the structure? Where can you turn for answers? To Chapter 15 of NFPA 5000™, *Building Construction and Safety Code*™.

Chapter 15, "Building Rehabilitation," provides information on repair, renovation, modification, reconstruction, change-of-use classifications, change-of-occupancy classifications, additions, and historic buildings that can help you solve these problems. Projects associated with historic buildings, defined in Section 15.2.2.8, must generally comply with the provisions of Sections 15.3, "Repair," through 15.7, "Change of Use and Change of Occupancy Classification," although alternatives and regulations found in Section 15.9, "Historic Buildings," supercede some of those provisions.

Meeting the challenges

One challenge those engaged in his-

toric building projects often encounter is the issue of accessibility. According to Section 12.3.5, "Qualified Historic Buildings and Facilities," the AHJ has the authority to determine whether complying with NFPA 5000 will threaten or destroy a structure's historical significance. If it does, the section outlines provisions for accepting a reduced level of accessibility. In fact, any time an AHJ deems an accessibility requirement "technically infeasible," the code simply requires that accessibility be provided to the maximum extent feasible. A building that isn't intended for public use, for assembly, or as a place of employment needn't meet the code's accessibility provisions.

Another common challenge in historic projects is stair rise and run. Exception 3 to Section 15.6.1.2 states that any stairway replacing an existing stairway in a space where the pitch or slope can't be reduced because of existing conditions needn't comply with the maximum riser height or minimum tread depths found in Section 11.2.2.2.

Other provisions of Chapter 15 provide detailed direction on dealing

with means of egress, corridor doors, transoms, other corridor openings, door swings, dead-end corridors, handrails, guardrails, shafts, fire and smoke barriers, automatic fire detection, interior finishes, and one-hour fire-resistive assemblies.

Code officials will find resources to help them achieve an acceptable level of compliance in other chapters of NFPA 5000, as well. For example, Chapter 1 provides a method for accepting equivalency provisions, while Chapter 2 contains a list of resources code enforcers and designers can use to meet the historic building provisions of NFPA 5000, including NFPA 1, *Fire Protection Code*™; NFPA 101®, *Life Safety Code*®; and NFPA 914, *Fire Protection of Historic Structures*. Chapter 3 defines the terms used during a historic renovation project. And Chapter 5 provides performance-based options.

Used with good judgment, the provisions of NFPA 5000 will allow us to achieve an acceptable level of safety in historic buildings without destroying their character. 🐪

JERRY WOOLDRIDGE is chair of the technical correlating committee for NFPA 5000.

IN 1990, THE U.S. Architect of the Capitol began retrofitting the 19-million-square-foot (1.76-million-square-meter) U.S. Capitol complex with sprinklers, setting an impressive example in the protection of heritage buildings from fire. Since then, the Architect of the Capitol has retrofitted 17 million square feet (1.57 million square meters) of offices, dor-

such structures that weren't sprinklered. Windsor Castle in England was severely damaged by fire in 1992, and the Sofien Salon festival hall in Vienna was destroyed in 2001.

Special considerations

The NFPA Technical Committee on Cultural Resources advocates sprinkler protection for all historic

editions of NFPA 914, *Fire Protection of Historic Structures*, and NFPA 909, *Fire Protection of Cultural Resources*, to ensure that designers take appropriate precautions when providing them with sprinkler protection.

Perhaps the most important job facing the task group appointed to this project is developing specifications and contract administration features

Sprinkler technology for historical retrofits has improved

mitories for congressional pages, child day care centers, even canine facilities, most within the past six years. The office is now in the final phase of the project, which involves retrofitting the remaining 80 percent of the Supreme Court building and the remaining 70 percent of the Capitol itself.

Why undertake such a massive project? Because the value of protecting historic buildings with sprinklers is well established. To date, the Capitol sprinklers have successfully controlled three fires, and no water has accidentally discharged, except in cases where sprinklers were subjected to mechanical damage. Elsewhere in the United States, the great historic wooden hotels, such as the Del Coronado in California, the Mt. Washington in New Hampshire, and the Mohonk Mountain House in New York are with us because of their automatic sprinkler systems. Their nonsprinklered counterparts long ago became victims of fire.

And if one needed further evidence to make the case for installing sprinklers in heritage buildings, one need only remember the fates of



that stress the special fabric of historical properties. The need for robust sprinklers to guard against the possibility of accidental discharge may be considered more important than the thermal sensitivity afforded by fast-response sprinklers, for example. Or it may be appropriate to air test a retrofitted sprinkler system before

conducting the hydrostatic test.

Clauses in specifications that call for special precautions and care in installation must also be accompanied by education for the fire sprinkler contractors and their employees. Special meetings with the foremen and fitters may be appropriate to ensure that they don't deviate from the specifications or make mistakes that could destroy the character of the property.

The attention now being given to installation practices and protocols will help ensure that workmanship, like technology, is matched to the special needs of historic buildings. ❖

RUSSELL P. FLEMING is executive vice-president of the National Fire Sprinkler Association.

Potter is now IN CONTROL

Potter's 104-year reputation for quality, support and service now is available in Fire Alarm Control Panels and peripherals.

You know Potter. Now you can sell and install a complete line of Potter FACP's and peripherals—2 to 5-zone conventional panels; 2,4 or 8-zone microprocessor-based panels; 127-point analog addressable panels—all available from Potter, an independent company of unquestioned reputation.

Sometimes a brand isn't just a name, it's a virtual guarantee. Potter is that type of brand, and now, Potter can be your Fire Panel brand as well.

P POTTER
The Symbol of Protection

1.800.325.3936 www.pottersignal.com

Circle 013 on Reader Service Card



Remember, if it doesn't have **P** The Symbol of Protection, It isn't Potter.

FALLACY

Use only the apparatus necessary to meet to meet tactical objectives.

FACT

All apparatus at the scene should be operating.

CONDITIONS PERMITTING, FIRST-ALARM

companies follow standard operating procedures (SOPs) and pre-incident plans when positioning

Staging areas can also be used as holding areas for the tactical reserves an IC needs to cover unanticipated problems and relieve operating crews or as a parking area for out-of-service apparatus. During a large-scale offensive operation, later-arriving units are often used to deliver additional staff. If the apparatus' pumps, ladders, and tools aren't needed, the apparatus are out of the way in the staging area.

It's important to distinguish

that provides adequate space and access to the incident. An officer should be assigned as the staging commander.

Staging areas should be far enough away from an incident to keep apparatus from obstructing or slowing access to the scene, but close enough to allow companies to arrive quickly when summoned. If the staging area is too close to the incident, members may be tempted to leave their apparatus to help at the scene.

Staging lets you manage incidents safely

apparatus and personnel to fight fires. If an incident commander (IC), who's typically in charge of the first-in company, sizes up a situation and decides that certain units aren't needed immediately, however, he or she can direct them to a staging area. Establishing a staging area at the onset and directing all responding companies to that location unless otherwise ordered allows the IC to manage on-scene units better, establish a tactical reserve, and eliminate potentially dangerous freelancing.

During the early stages of an operation, a disorganized IC can easily be overloaded with information from several sources, including radio communications from on-scene and incoming units. If he or she hasn't determined how responding forces are to be deployed, incoming units will have a tendency to "freelance" into action. Staging areas can keep this from happening.

Such areas can also keep an IC from using apparatus when they aren't really needed, a move that can create problems if tactics change and the apparatus is needed in a different capacity or at a different location. Repositioning an apparatus and its personnel can be difficult and impractical at that point.

between an out-of-service apparatus parked in staging and a staged unit that's part of the tactical reserve. A staged unit is fully staffed and ready to respond immediately, while an apparatus that's out of service isn't.

Where to set the staging area

The best time to identify good staging locations is during the pre-incident planning process, not in the middle of the night during the heat of battle.

A department's SOPs and pre-incident plans should outline the way the staging area is to be managed, the duties of the staging commander and the company officers whose units are assigned to staging, and the physical characteristics of an effective staging location. Depending on such factors as the size of the property, access, and the weather, the staging area may be a parking lot, a nearby firehouse, or some other pre-determined location that will provide security and some protection from the elements. During larger incidents, a more formal staging area may be established in a place



A staging area near the Pentagon on September 11, 2001.

Determining where to position a staging area is particularly important at large, complex properties. Some such properties may have convenient locations for staging areas on the premises, such as large, sheltered parking areas or wide streets where the staged units won't obstruct traffic.

An important management tool, staging increases both safety and efficiency at an incident by providing a means of deploying forces to achieve tactical objectives while preventing dangerous freelancing. ❖

RUSS SANDERS and **BEN KLAENE** are authors of the book *Structural Fire Fighting*.



What Detector Line Best Satisfies Your Standard and **Non-Standard** Installations?

At System Sensor, we recognize your fire alarm requirements cannot always be served with a "standard" product. That's why we've expanded our i³ line of smoke detectors, to accommodate your total conventional smoke detection needs.

The line now boasts ten detector models, including options for an integral sounder, a Form C relay, and an isolated thermal sensor. Combined with the unique i³ accessories, including the new reversing relay/synchronization module, the i³ Series is the solution that stands above the rest.

Backed by the System Sensor name, you're assured that i³ detectors are guided by the principles of:

Installation Ease

Intelligence

Instant Inspection

Simply, the i³ Series lowers your installation costs, slashes nuisance alarms and reduces inspection time to an instant.

Find out why the i³ Series makes sense for your applications. Circle the number on the reader service card for a free i³ Series CD-ROM, call us at 800/927-6676.



There's an i³ Series smoke detector for any application, from residential to commercial, and everything in between.



advanced ideas. advanced solutions.™

800/927-6676
www.systemsensor.com

Circle 018 on Reader Service Card



REVISED MOST RECENTLY for the 2002 edition, NFPA 13D, *Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, addresses the design and installation requirements for residential fire sprinkler systems. These requirements can help eliminate confusion about residential sprinklers.

the sprinklers.

Because NFPA 13D requires that residential sprinklers be listed for use by an independent testing organization acceptable to the authority having jurisdiction (AHJ), this increase in density may also be in effect if you use an earlier edition of NFPA 13D. On July 12, 2002, Under-

NFPA 13D installations protect where most fire deaths occur

Why don't more homes have fire sprinkler systems?

Residential fire sprinkler systems could be one of the greatest modern ironies. While the benefits of installing such systems seem obvious to fire protection professionals, many homeowners, builders, and fire officials are only aware of the myths surrounding them.

They think sprinklers will create an "industrial" look or that they're expensive. Most homeowners aren't aware that 8 of every 10 fire deaths occur in the home or that installing smoke detectors and residential sprinklers can reduce the risk of a fire-related death by 82 percent.

Doesn't the 2002 edition of NFPA 13D require a larger water supply than past editions?

Effectively, yes. NFPA 13D now requires that each design sprinkler discharge at least 0.05 gallons (0.19 liters) per minute for each square foot (0.09 square meters) the sprinkler is listed to protect. That amount of discharge, or design density, is generally larger than has traditionally been required. As a result, designers may have to increase the size of the piping and the water meters serving

writers Laboratories changed its residential sprinkler listing criteria, making it a requirement that sprinklers used in NFPA 13D applications discharge at least 0.05 gallons (0.19 liters) per minute for each square foot (0.09 square meters) protected. Check the listing of the sprinkler you're installing to determine the required design discharge.

The listing of the residential sprinkler I'm using specifies only one flow rate. Do I still have to perform single- and multiple-sprinkler calculations with NFPA 13D?

Depending on system's arrangement, NFPA 13D requires that the water supply for a typical residential setting be able to supply the most demanding compartment with no more than two sprinklers flowing. If the listing requires the same discharge flow for both single- and multiple-sprinkler operation, you only have to calculate a multiple-sprinkler operation for compartments with more than one sprinkler. However, the designer must verify that there's enough water available to supply all compartments with a single sprinkler. Depending on the elevation and piping arrangements, a compartment with one

sprinkler may actually be more demanding than a compartment with two sprinklers.

Aren't residential sprinklers high maintenance and involve local fire officials?

No. NFPA 13D doesn't require AHJs to inspect a system after it's been installed and accepted. The most important aspect of maintaining a residential sprinkler system is making sure the sprinklers' water supply hasn't been shut off. This isn't generally a problem because NFPA 13D requirements anticipate that the water supply will be self-monitored, in that the same water source that typically supplies the domestic system will also supply the sprinklers.

Could home improvement projects affect a residential sprinkler system?

Yes. If you add a room or otherwise alter your home, you must consider any piping changes and verify that the water source can supply any additional sprinklers. Of increasing concern is adding equipment, such as a water filtration and/or water softening systems. This type of equipment can affect the sprinkler system because much of it doesn't allow for the water flow rates sprinklers require. NFPA 13D has been changed to require that a bypass valve be installed where flow/pressure-limiting water filtration and water softening type equipment is installed. This valve directs the water around the equipment should a fire sprinkler activate. ❖

DANA HAAGENSEN is an NFPA fire protection engineer.

Safety Storage, Inc.

Buildings, Lockers, and Spill Containment Products



Safety Storage hazmat buildings, structures, lockers, and secondary containment products provide regulatory compliance with maximum flexibility!

Safety Storage, Inc. manufactures relocatable hazmat storage buildings, structures, lockers and secondary containment products. They are designed to safeguard personnel, minimize liability, avoid soil and groundwater contamination, meet fire safety needs, and increase productivity.

NON-COMBUSTIBLE STEEL and FireShield® BUILDINGS



The most popular line of hazmat storage buildings. Models provide up to 434 sq. ft. of floor space and numerous sizes accommodate small-to-large quantities. 2-hour FireShield® buildings facilitate placement closer to property lines.

Circle 024

4-HOUR FIRE-RATED BUILDINGS



Store flammable liquids and other hazardous materials safely. A range of models are available. These buildings may be located less than 5' from property line.

Circle 025

P-SERIES PALLET STORAGE



P-Series structures offer two-tiered storage and convenient access for simplified material handling and containment. A range of models provide storage capacities from 8 to 64 palletized 55-gallon drums.

Circle 026

NEW 2X2™ SERIES BUILDINGS



This flexible series of non-combustible steel and FireShield® 2-hour fire-rated buildings let you fit virtually every space and storage requirement. Sizes range from 6 drum to 150 drum capacities (single level). Buildings are available in multiple lengths and widths. Or put buildings end-to-end or side-by-side for even greater capacity.

Circle 027

N-SERIES STORAGE LOCKERS



Durable steel storage lockers are designed for single or double stacking of palletized materials or the storage of individual containers. Models available for storage of up to 48 palletized 55-gallon drums.

Circle 028

CUSTOM STRUCTURES



Custom-engineered, prefabricated structures offer a timely, cost-effective way to safely isolate a hazardous manufacturing process from other non-hazardous operations, protect outside equipment from weather, theft and vandalism, and quickly add workspace to existing facilities.

Circle 029

SPILL CONTAINMENT SUMPS



Relocatable Safe-T-Sumps™ are available in five standard sizes providing up to 371 sq. ft. of floor space for a storage capacity of eighty 55-gallon drums.

Circle 030

SAFE-T-PALLET™



Easily relocatable steel Safe-T-Pallets provide secondary spill containment for 55-gallon drums. Available in one-, two-, three-, and four-drum sizes. Lets you conveniently place drums near points of use.

Circle 031

FREE HAZARDOUS MATERIAL STORAGE SURVEY

Call us today for a complimentary, no-obligation survey of your storage requirements by trained field professionals.

Circle 032



Call Toll Free:
1-800-344-6539

...professional hazmat solutions!



SAFETY STORAGE, INC.
2301 Bert Drive,
Hollister, CA 95023
Phone: 831-637-5955
Fax: 831-637-7405
info@safetystorage.com
www.safetystorage.com

SEVERAL YEARS AGO, while working on an historic-building renovation, I sat in on the design team's presentation. At the end, I noted that no one had mentioned fire protection—no fire alarm or detection systems and no sprinkler

but it isn't because the building has to meet a minimum level of safety. This exception places a large responsibility on the AHJ, who has to determine that there are no serious life-safety deficiencies.

Section 8-17.2 also requires that his-

gress from historic structures be evaluated in accordance with NFPA 101, and, like NFPA 909, includes an appendix covering archaic construction materials.

Finally, NFPA 101 allows the AHJ to modify its provisions where a reason-

NFPA codes create a balance between life safety and the preservation of history.

system. When I asked why, the architect told me that, since the building was constructed before the Revolutionary War, sprinklers and fire-alarm systems wouldn't be historically correct. I responded that electricity, HVAC, and indoor plumbing weren't historically correct, either, so maybe those systems shouldn't be installed! After further discussion, we agreed that the building needed fire protection after all.

I'm sure everyone's heard the term "grandfather clause," which is often used when referring to code compliance in old buildings. The logic behind the grandfather cause is that, because the building was constructed before there were any codes or before the current codes were adopted, no codes apply. Well, there really is no such thing as a grandfather clause in fire and life-safety protection. Just because a building is very old doesn't mean it doesn't need to be safe. All buildings, even very old, historic buildings, must still provide a minimum level of safety for the occupants.

Several NFPA documents address historic buildings. For example, Section 8-17.1 of NFPA 1, *Fire Prevention Code*TM, excludes from its requirements any building a government agency has deemed historic as long as the authority having jurisdiction (AHJ) has determined that there's no serious life-safety hazard. This may appear to be a grandfather clause,

but it isn't because the building has to meet a minimum level of safety. This exception places a large responsibility on the AHJ, who has to determine that there are no serious life-safety deficiencies. Section 8-17.2 also requires that historic buildings comply with NFPA 909, *Protection of Cultural Resources*. NFPA 909 also covers spaces in other buildings used for such culturally significant purposes and requires that historic buildings comply with NFPA 101[®], *Life Safety Code*[®]. NFPA 101 also states that the AHJ can consider alternative arrangements, provided those arrangements offer equivalent or greater protection. NFPA 909's valuable Appendix L, "Guideline on Fire Ratings of Archaic Materials and Assemblies," includes the approximate or expected fire-resistance ratings for archaic construction materials, such as horse-hair plaster on wood lath and clay tile.

Also of interest is NFPA 914, *Fire Protection in Historic Structures*, which describes fire-safety requirements for the protection of historic structures and those who operate, use, or visit them. NFPA 914 covers ongoing operations, renovations, and restorations, and acknowledges the need to preserve historic character. NFPA 914 also requires that the means of

able degree of safety is evident. Again, this means that the AHJ must carefully evaluate each situation individually.

The challenge in protecting historic structures is to maintain their historical fabric while providing a reasonable level of safety for their occupants and contents. This requires sensitivity and ingenuity, and presents an opportunity for creative design solutions, rather than by-the-book fire protection. ♣

CHIP CARSON is president of Carson Associates, Inc., in Warrenton, Virginia.





LONG BEFORE THE DOORS OPEN,

WE HELP YOU MAKE SURE THE BUILDING HAS
PASSED YOUR MOST IMPORTANT TESTS.



The important work code authorities do today helps safeguard the future. We support your efforts, and at Underwriters Laboratories, we are committed to making your job easier. When you see the UL Mark of Safety, you can feel confident knowing it represents more than a century of experience in testing and certification. This year, the Mark will appear on more than 17 billion products. We will also complete more than a half-million visits to audit compliance and certification requirements. As you go about your inspections, you can look to UL for special on-site evaluation services, an 800 number for questions, access to specialized product directories, and online technical and compliance information. Together, we're working for a safer world.



www.ul.com

©2002 Underwriters Laboratories Inc.®

Circle 021 on Reader Service Card

THE U.S. FIRE Administration (USFA) is looking for U.S. fire departments that aren't currently listed in Phase I of the 2002 National Fire Department Census.

The initial list, published in November, contained 16,000 fire departments, but USFA officials believe there may be duplications and are sure there are omissions.

USFA database will help define departmental needs

They know fire departments are missing because some departments that applied for Assistance to Firefighters grants aren't listed in the census. More than 19,500 fire departments applied for grants in 2001, and approximately 5,500 of them will receive awards before the end of the year 2002. This \$360 million investment in the nation's fire departments can be used for training, firefighting and personal protective equipment, fire code enforcement, inspector certification, and a few other things.

Total estimates of the number of fire departments in the United States run as high as 30,000. Gayle Weant-Kelch, the USFA statistician working on the census, says that some federal agencies claim to have complete listings of U.S. fire departments, but she suspects that they contain the names of individual stations within departments, meaning the 30,000 estimate is inflated.

Assembling a complete census is important for a number of reasons.

"This census database will be used to conduct special projects to guide program decision-making and to enhance our direct communication with individual fire departments," says Charlie Dickinson, deputy administrator of the USFA. The data will include department names, addresses, and web addresses if applicable, as well as organization

type—that is, whether it's a federal, state, or local, organization—and department type—that is, career, volunteer, or paid per call.

More specifically, the data will be used to study fire department demographics, such as race and ethnicity.

"That's one of our objectives in the future," notes Weant-Kelch. "The data will also be used to determine what

base and as a street address in another.

"Slight differences in how a department registered its name or address have caused the department to appear as two separate entities," explains Dickinson. "Any department believing they received this recent mailing in error is asked to contact the USFA to quickly and easily resolve any confusion."

Some fire departments may not have filled out census forms because they completed the Fire Service Needs Assessment Survey and mistakenly thought that was the census. Separate and distinct from the



kinds of courses we need to implement at the Fire Academy."

The USFA has sent letters to fire departments that applied for Assistance to Firefighters grants but don't appear to have been included in the census. Some of these departments may actually have been listed, but variations in the way their names or addresses were given on the grant application may have confused the issue. Hypothetically, a department listed in the census as the XYZ Fire and Rescue Company may have applied for an Assistance to Firefighters grant as the XYZ Volunteer Fire Department. Or its address may be listed as a post office box in one data-

National Fire Department Census, the Needs Assessment Survey is being conducted by the USFA in conjunction with NFPA to define the current fire service roles and activities, determine the adequacy of current levels of funding, and identify shortfalls.

Fire departments can visit the USFA web site at www.usfa.fema.gov to see whether they're listed, and listed correctly. There's also a link to the census. Departments that aren't listed in the census should e-mail Weant-Kelch at gayle.weant@fema.gov for the proper forms.

STEPHEN BARLAS is a freelance writer based in Washington, D.C.

We're bringing
together the best and the
brightest professionals in the fire
protection and life safety industries

2003

NFPA World Safety Conference & Exposition™

Dallas Convention
Center
Dallas, Texas

Conference:
May 18-21, 2003

Exposition:
May 18-20, 2003

Save the date!
Your future may depend on it.

Spend four energizing days in Dallas next May networking with your peers from around the world. Decide your future as you vote on codes and standards that will affect the way you do your job. Participate in pre-conference seminars and professional development opportunities, including CEU-accredited courses. Experience the newest technologies demonstrated by over 250 exhibitors. If you're a fire protection or life safety professional, you should be there!



For more information, including how to register and exhibit, visit us online at
www.nfpa.org/meetings or call +1-617-984-7310

RETROFITTING A FIRE alarm system in an existing building is always a challenge. When that building is an historical landmark, however, the challenges become especially keen.

Although preservationists usually understand the necessity of installing fire alarm systems, they often impose restrictions because they don't want

tion in a workmanlike manner and make sure it complies with NFPA 70, *National Electrical Code*[®]. Rarely do they have to consider whether anyone can see the raceway or its color or shape. In an historic building, however, the owner may not let the technicians simply attach the raceway to the wall or ceiling. Technicians

acter, the fire alarm system designer may have to increase the number of detectors used or devise an innovative approach to a specific detector application. Designing for historic properties often requires designers to think outside the box.

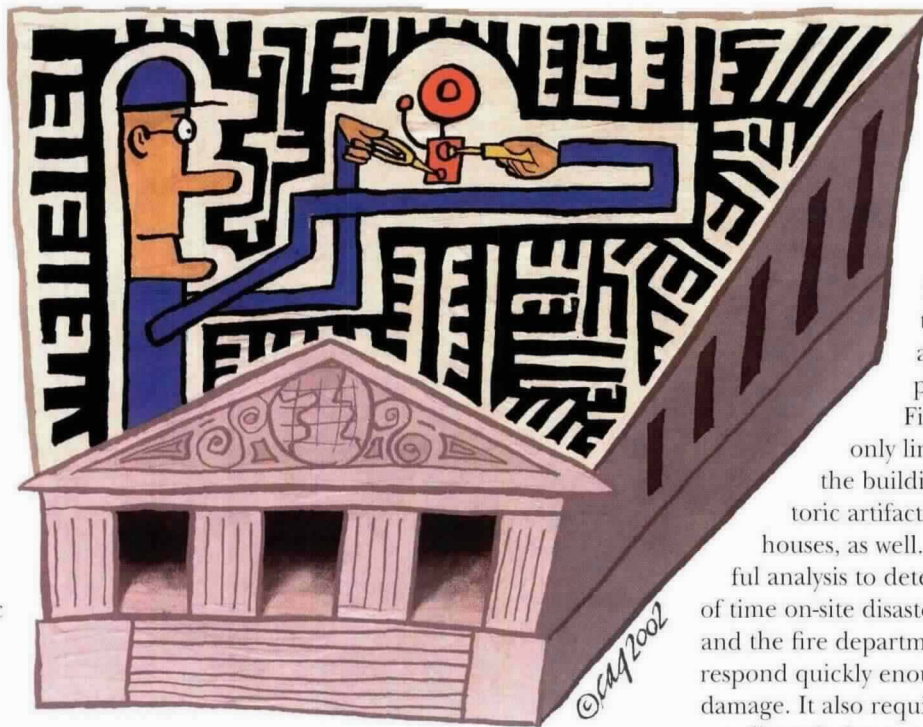
Other factors designers must consider when creating fire alarm

Using fire alarm systems to protect our heritage

to damage the historical fabric of the building. As a result, fire alarm system installations in historic properties differ in many ways from those in non-historic properties.

For instance, technicians aren't usually too concerned about the amount of damage they do when making access holes in the walls or ceilings of a non-historic building. Since they know that other workers can easily make the walls as good as new, they only care that the holes will be large enough to afford access. When a technician considers making a hole in an historic building, however, he or she may have to limit its size severely so it doesn't irreparably destroy the building's historic fabric. In some cases, this may even mean not making a hole, at all.

The same applies to installing fire alarm system wiring in raceways. In non-historic buildings, technicians typically need only make the installa-



systems for non-historic buildings, such as fire department response times and available water supplies, take on increased importance when applied to historic properties.

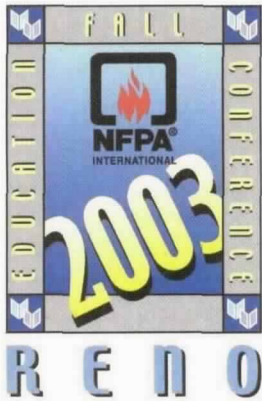
Firefighters must not only limit fire damage to the building but to the historic artifacts the building houses, as well. This requires careful analysis to determine the amount of time on-site disaster recovery teams and the fire department will need to respond quickly enough to mitigate the damage. It also requires a clear understanding of what areas may be more historically significant than others.

In the final analysis, the designer, contractor, and the contractor's technicians must deliberately adjust their attitudes and approach to alarm system design and installation in historic properties. Guided by NFPA 914, *Fire Protection in Historic Structures*, they must treat such projects as a mission, not as just another job. ❖

may have to use other installation routes or procedures not generally used in a normal fire alarm system installation.

Often, the protection required for an historic property will exceed building code requirements. For example, the location and spacing required by NFPA 72[®], *National Fire Alarm Code*[®], for detectors may not meet the restrictive requirements imposed by historic fabric preservation. To avoid harming the building's historic char-

WAYNE D. MOORE is chair of the National Fire Alarm Code Technical Correlating Committee.



Call for Presentations

NFAA Fall Education Conference Reno Hilton - November 15-19, 2003



We are now accepting proposals for educational presentations at NFAA's Fall Education Conference. We invite you to share your experience and expertise with your peers in the field of fire and life safety as a presenter in Reno, Nevada, November 15-19, 2003. The Fall Education Conference features in-depth, CEU accredited training sessions in 4 and 8 hour classroom settings. Please complete the form below in full and return, via mail, email, or fax to NFAA by March 28, 2003. All presentation proposals will be reviewed by the Sessions Committee and selections will be made based on quality, relevance, focus, practical application, timeliness and on the presenter's experience and credentials.



Presentation Submission Form *(Please type or print clearly.)*

Title of presentation: _____

Description of presentation (50 words or less): _____

Presentation Length: 4 hours 8 hours Other _____

To be considered, a resume and short description of the presenter's and any co-presenter's credentials must be attached.

Learning Objectives: _____

Important: A handout will be required 4 weeks in advance of the conference. NFAA does not pay for travel expenses, but speakers will receive a complimentary conference registration.

Presenter Information:

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____ Country: _____

Phone: _____ Fax: _____

E-Mail: _____

If you plan on someone presenting this topic with you, please complete the information below. Use additional pages if necessary.

Co-presenter Information:

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____ Country: _____

Phone: _____ Fax: _____

E-Mail: _____

Return form to:
NFAA
Attn: Linda Bailey
One Batterymarch Park
Quincy, MA 02269
Fax: +1-617-984-7030
Email: lbailey@nfpa.org

**Deadline for
submission is
March 28, 2003**

NFPA SPONSORS HUNDREDS of events a year, from the well-attended World Safety Conference and Exposition™, to code seminars, to distance learning programs on the Web. But what happens when a technical committee wants to spread the word about its documents, and the target group is too small to support a full-scale program?

When faced with this problem, the Technical Committee on Cultural Resources decided to host its own workshop. The effort that went into developing and running it made the workshop successful, and other NFPA groups can learn from the experience.

The Technical Committee on Cultural Resources, which is responsible for NFPA 914, *Fire Protection in Historic Structures*, and NFPA 909, *Protection of Cultural Resources*, decided to piggy-back its seminar onto its regular

industry over two and a half days. The participants attended 14 sessions, including case studies, and toured Independence Hall (pictured).

Getting down to business

To design the seminar, the committee counted on committee member Steve Peterson, who put together the speakers and the sessions. Finding a sponsor for the program and the right location were another matter, however. For this, the committee counted on its relationship with The Engineers Club of Philadelphia, to which Staff Liaison and Senior Building Code Specialist Allan Fraser had spoken in the past. The committee knew that The Engineers Club had experience running small seminars and asked it to sponsor the event.

The next task was finding a partner that could process the registrations. For that, the committee turned to the

with you," says Kampmeyer. In this case, that meant going to the location just twice in the planning stages. The facility finally chosen offered rooms, food, and a staff, as well as a view of Philadelphia's historic landscape.

Kampmeyer also helped determine how many participants would be needed to break even. Any fewer would mean cancellation.

Details, details

With the big items taken care of, there were still small details to consider. For example, finding a way to accept credit card payments was essential, but the cost of setting up a system was prohibitive, says Kampmeyer. Fortunately, NFPA was able to it arrange through the service we use at our other events for a nominal fee.

The local tourist bureau provided registrants with visitor's guides, which saved committee resources, and Kampmeyer, who also chairs the Architects, Engineers, and Building Officials Section, helped advertise the seminar through *NFPA Journal's* "Section News."

It all came together September 25-27, when the Technical Committee on Cultural Resources successfully presented its *Fire Protection of Historic Properties* program.

By partnering on a small scale with a local organization that had similar interests, the committee was able to spread the word, without financial strain, about its revised documents to the audience for which those documents are intended. Perhaps even more valuable than getting the word out was the opportunity the program gave those who use the documents daily to provide input that can be used to improve them in the future. ♣

Presentations from the seminar can be found at www.nfpa.org/MemberSections/AEBO/AEBO.

JENNA PADULA is a frequent contributor to *NFPA Journal*

Recruiting the right partners can help you get your message out

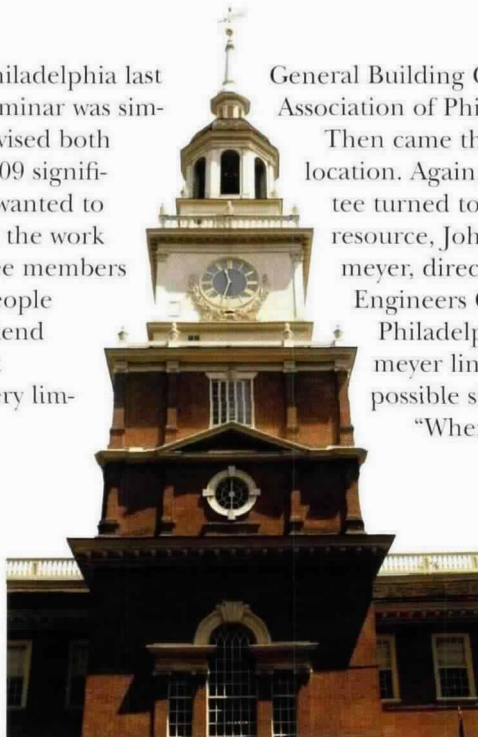
business meeting in Philadelphia last fall. The goal of the seminar was simple: having recently revised both NFPA 914 and NFPA 909 significantly, the committee wanted to spread the word about the work it had done. Committee members also hoped to reach people who don't normally attend NFPA meetings. And it wanted to do it on a very limited budget.

With the help of some essential volunteers and a few outside groups, the committee pulled it off, offering presentations by speakers well known in the

General Building Contractors Association of Philadelphia.

Then came the question of location. Again, the committee turned to a local resource, John Kampmeyer, director of The Engineers Club of Philadelphia. Kampmeyer lined up three possible sites.

"When putting together a seminar such as this, it's critical to choose a facility that will work



PHOTOGRAPH: AP/WIDE WORLD

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!

SEND FOR FREE INFORMATION TODAY!

Visit www.pub-serv.com/rs/nfpajrnl, fax to 1-856-786-4415, or mail this postpaid card today.

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	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180	181	182
183	184	185	186	187	188	189	190	191	192	193	194	195	196
197	198	199	200	201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220	221	222	223	224
225	226	227	228	229	230	231	232	233	234	235	236	237	238
239	240	241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264	265	266

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:
 A Immediate Purchase
 B Future Project

Type of Organization:
 A Architecture, Engineering, Contracting
 B Government

C Fire Service, Public and Private
 D Industrial Firm (Factory, Warehouse)
 E Commercial Firm (Office, Retail, Lodging, Restaurant)
 F Institutional (Health Care, Education, Detention, Museums)
 G Electrical Services, Installation
 H Insurance, Risk Management
 I Utilities
 J Other

Purchasing Authority:
 1 Recommend
 2 Specify
 3 Approve

Visit www.pub-serv.com/rs/nfpajrnl

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	163	164	165	166	167	168
169	170	171	172	173	174	175	176	177	178	179	180	181	182
183	184	185	186	187	188	189	190	191	192	193	194	195	196
197	198	199	200	201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220	221	222	223	224
225	226	227	228	229	230	231	232	233	234	235	236	237	238
239	240	241	242	243	244	245	246	247	248	249	250	251	252
253	254	255	256	257	258	259	260	261	262	263	264	265	266

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:
 A Immediate Purchase
 B Future Project

Type of Organization:
 A Architecture, Engineering, Contracting
 B Government

C Fire Service, Public and Private
 D Industrial Firm (Factory, Warehouse)
 E Commercial Firm (Office, Retail, Lodging, Restaurant)
 F Institutional (Health Care, Education, Detention, Museums)
 G Electrical Services, Installation
 H Insurance, Risk Management
 I Utilities
 J Other

Purchasing Authority:
 1 Recommend
 2 Specify
 3 Approve

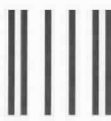
Visit www.pub-serv.com/rs/nfpajrnl

We would appreciate your comments...

LETTER TO THE EDITOR _____

NAME _____
 TITLE _____ COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP _____ COUNTRY _____
 E-MAIL _____ PHONE () _____





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

POSTAGE WILL BE PAID BY ADDRESSEE

NFPA BUYERS GD/JRNL
 P.O. BOX 11765
 RIVERTON NJ 08076-7365



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

POSTAGE WILL BE PAID BY ADDRESSEE

NFPA BUYERS GD/JRNL
 P.O. BOX 11765
 RIVERTON NJ 08076-7365



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



No Postage
 Necessary
 if Mailed
 in the
 United States



No Postage
 Necessary
 if Mailed
 in the
 United States



No Postage
 Necessary
 if Mailed
 in the
 United States



Visit www.pub-serv.com/rs/nfpajrnl, fax to 1-856-786-4415,
 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!



AS FIRE DEPARTMENTS across the United States were motivating their communities to “Team Up for Fire Safety” during Fire Prevention Week 2002, NFPA President Jim Shannon and U.S. Fire Administrator David Paulison signed an agreement signaling a new kind of partnership to enhance the public’s safety. Speaking

expanded the program after September 11, 2001, to include an important section on general preparedness.

The new *Risk Watch* components reflect the style and format of the original *Risk Watch* lessons on preventing unintentional childhood injuries, which remain the leading threat to U.S. children. This means

NFPA finds new recruits for community safety

on behalf of Federal Emergency Management Administration (FEMA) Director Joe M. Allbaugh, Paulison announced NFPA’s *Risk Watch*® as the first official affiliate program of the new Citizen Corps initiative, part of an ambitious federal call for all Americans to embrace the spirit of volunteerism.

The mission of the Citizen Corps is to enable individual citizens, through education, training, and volunteerism, to make communities safer, stronger, and better prepared to respond to disasters. As longstanding allies in the fight to protect Americans from fire and other preventable injuries, FEMA and NFPA are well positioned to join forces in the broader challenge of preparing the nation to withstand other threats, from devastating natural disasters to terrorism.

The timing of this agreement couldn’t be better. Early this year, NFPA will release the *Risk Watch: Natural Disasters*® program, developed with technical support from FEMA experts and major funding from the Home Safety Council, a not-for-profit organization founded by Lowe’s Home Improvement Warehouse. Originally intended to help children and their families prepare for the six leading natural disasters—floods, earthquakes, hurricanes, tornadoes, winter storms, and wildfires—NFPA

that teachers and other safety advocates can introduce the disaster preparedness messages into existing *Risk Watch* classroom activities with little or no additional training. Beginning this year, NFPA’s Public Education Division will work with our trained local Champions and state-level Champion Management Teams to help communities seamlessly integrate *Risk Watch* and *Risk Watch: Natural Disasters* to improve the safety and preparedness of American homes.

The connection between the Citizen Corps and the NFPA Champion program runs deep. Mike Bryne, a 1996 NFPA Champion, was instrumental in establishing the foundation for the Citizen Corps program. Bryne, formerly with the New York City Fire Department, currently serves as senior director of response and recovery at the Office of Homeland Security. He strongly believes that the ability to help ourselves in times of disaster and turmoil is crucial to our nation’s safety.

Having been trained by NFPA to introduce both *Learn Not to Burn*® (LNTB) and *Risk Watch* in his community, Mike recognized the value of using classrooms to deliver important safety lessons into American homes.

“I knew the Citizen Corps would need good educational materials and the support of local safety experts to



reach out effectively to children and families,” says Bryne. “With *Risk Watch* and the Champion network already in place, NFPA has the tools and systems to help the Citizens Corps drive its message home.”

It’s no coincidence that organization leaders signed the FEMA/NFPA letter of affiliation with the Citizen Corps at the Arlington County, Virginia, Fire Department’s Station Nine, one of the first stations to respond to the September 11 attack on the Pentagon. Arlington has been one of NFPA’s most successful Champion communities since 1996.

“Firefighters protect the public before, during, and after an emergency,” says Bryne. “As trusted public servants, they can inspire families and communities to take positive action before disaster strikes.”

MERI-K APPY is NFPA’s vice president of Public Education.

■ by ALISA WOLF

With lower court rulings and a pending Supreme Court decision, the future of code writing remains

anyone's guess



Your future safety
lies in the hands of the courts.

LUCKY NUMBERS: 72, 101, 13, 70, 5000

PHOTOGRAPH: JON CHOMITZ

THE TWO SPARSELY

populated Texas communities of Anna and Savoy sit 1,200 miles (1,931 kilometers) away from the U.S. Supreme Court in Washington, D.C. But the two communities unwittingly became the center of a lawsuit that could land before the nation's highest court when a man named Peter Veeck posted the 1994 *Southern Building Code*, developed by the Southern Building Code Congress International (SBCCI) and adopted by the two communities, on his Web site. Veeck's action touched off a federal copyright case that could destroy or drastically limit the ability of NFPA and other voluntary model codes- and standards-makers in the United States to continue to develop high-quality safety codes and standards.

"The whole codes- and standards-development process in the United States is based upon protection of copyrights for the developers," says NFPA President Jim Shannon. "Copyright-protected sales of codes and standards is how most standards developers raise funds to support their standards development. This case could destroy that source of funds, and it's unclear what could replace it."

At issue is whether model codes- and standards-developers should retain their copyrights on works adopted by reference into law. Until recently, U.S. courts have answered "yes." But when Veeck posted the *Southern Building Code* on the Web, a copyright issue that's been lurking in the courts since the late 1980s became a live issue for voluntary consensus codes- and standards-making organizations nationwide.

The conflict began when SBCCI demanded that Veeck take the code down from his web site. Rather than comply, Veeck filed an action seeking a ruling that he hadn't violated the SBCCI's copyright. He argued that Anna and Savoy, with a combined population under 1,800, had adopted the code by reference into law, and that, since it was law, the code entered the public domain and could be copied by anyone without infringing on SBCCI's copyright. SBCCI counterclaimed that, by posting its code on the Web without permission or even attribution to SBCCI, Veeck had infringed on SBCCI's legitimate copyright.

Similar copyright issues have been heard in the courts before, says Maureen Brodoff, NFPA vice president and general counsel, most notably a Ninth

Circuit case involving a standard developed by the American Medical Association. In that case and the few other cases that have gone to court since, says Brodoff, "it looked like the law was developing in our favor."

In fact, the initial district court ruling in the Veeck case favored SBCCI, and a three-judge panel of the Fifth Circuit Court of Appeals affirmed SBCCI's copyright, though one judge dissented. It appeared that the court had rejected Veeck's argument that the work had entered the public domain when it was adopted by reference into law.

In a move that surprised SBCCI and the other model code organizations, however, the full court of 15 judges reheard the case and rejected the decision of the three-judge panel. On June 7, 2002, the full court decided in favor of Veeck, with nine judges deciding for Veeck and six against.

The ruling has alarmed NFPA and other concerned organizations, which have filed briefs in support of SBCCI as friends of the court, or amici curiae, to protect something no one in the United States can take for granted: the voluntary consensus codes- and standards-development process. These organizations include the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), and ASTM International (formerly known as the American Society for Testing and Materials).

On September 6, 2002, the case was appealed to the U.S. Supreme Court, which, instead of denying or granting the petition, asked the Solicitor General on December 2 to submit a brief expressing the views of the United

States. This means action on the petition will not take place for several months.

The Solicitor General determines the cases in which the U.S. government seeks review by the Supreme Court and the positions the government will take before the Court. The Solicitor General Office's staff attorneys participate in preparing the petitions, briefs, and other papers filed by the government in its Supreme Court litigation.

"In the meantime," says Brodoff, "we're left in a situation where the law is extremely uncertain and where the law in the Fifth Circuit may be different from law in other circuits, at least until further litigation."

Copyright issues debated

The case Veeck brought to the Fifth District Court was based, in part, on a doctrine developed by the courts interpreting the Copyright Act called the "merger doctrine." Veeck argued that SBCCI's code "merged" with the law when it was adopted by reference into law, and so had crossed the line between the expression of an idea, which can be copyrighted, and the idea itself, which can't be. The court supported Veeck's view that a copyright unfairly restricts access to the "idea" of the law.

More central to Veeck's argument, however, is the claim that owning a copyright in a work that is referenced in a law could theoretically give the copyright owner the ability to limit access to the law. But SBCCI responded that, although a model code's copyright protection may restrict users from having free copies of codes, it doesn't deny them access to code requirements. In fact, says Brodoff, it's in the best interest of organizations such as NFPA to make their codes and standards accessible, since they're written to be used and enforced. Restricting access would just negate the code-developers' mission.

"There's some intuitive appeal to the idea nobody should own the law,"

Brodoff says. "But a copyright allowed in works used by government doesn't mean citizens are deprived of access to the law. Not everyone has the right to own a free copy of a code, but they do have the right to access it, in the sense that they can go see it at a government

model code organizations would suffer. ANSI-accredited documents written for adoption by government entities, including NFPA's codes and standards and those of NFPA's competitors, could all be made freely available on the Web. This would stem the flow of the revenue from the sale of codes and standards that the model code organizations use to support the costly enterprise of code development. And if the model code organizations can't

assistant vice president of Codes and Standards Administration and secretary to the NFPA Standards Council, the United States is unlike other parts of the world, because it relies on volunteer membership organizations to develop codes and standards for adoption by reference into law. This system, says Grant, saves taxpayers money and promotes a democratic consensus process.

"What we have is a system that

NFPA IS LEFT IN A SITUATION WHERE THE LAW IS EXTREMELY UNCERTAIN AND WHERE THE LAW IN THE FIFTH CIRCUIT COURT MAY BE DIFFERENT FROM LAW IN OTHER CIRCUITS, AT LEAST UNTIL FURTHER LITIGATION.

raise funds for code development, negative effects would spread to government agencies that rely on privately developed consensus codes and standards. Inevitably, these negative effects would spread to the public, which relies on model codes and standards to protect their health and safety.

Cause for alarm

The implications of the Veeck decision, says Jim Thomas, president of ASTM, are disturbing.

"The decision of the Fifth Circuit Court creates uncertainty in the standards community," Thomas says, "and we hope the Supreme Court will accept jurisdiction and work to eliminate this uncertainty."

The uncertainty stems, in part, from the apparent disconnect between the Fifth Circuit Court's ruling on the Veeck case and a century-long tradition of privately developed model codes for government adoption. According to Casey Grant, NFPA's

works really well," Grant says "It's highly efficient."

Like NFPA, ASME International has filed an amicus brief in support of SBCCI. June Ling, ASME associate executive director of Codes and Standards, says that, while the Fifth Circuit attempted to narrow its decision to the specific case, it actually raised some broader implications for the community at large.

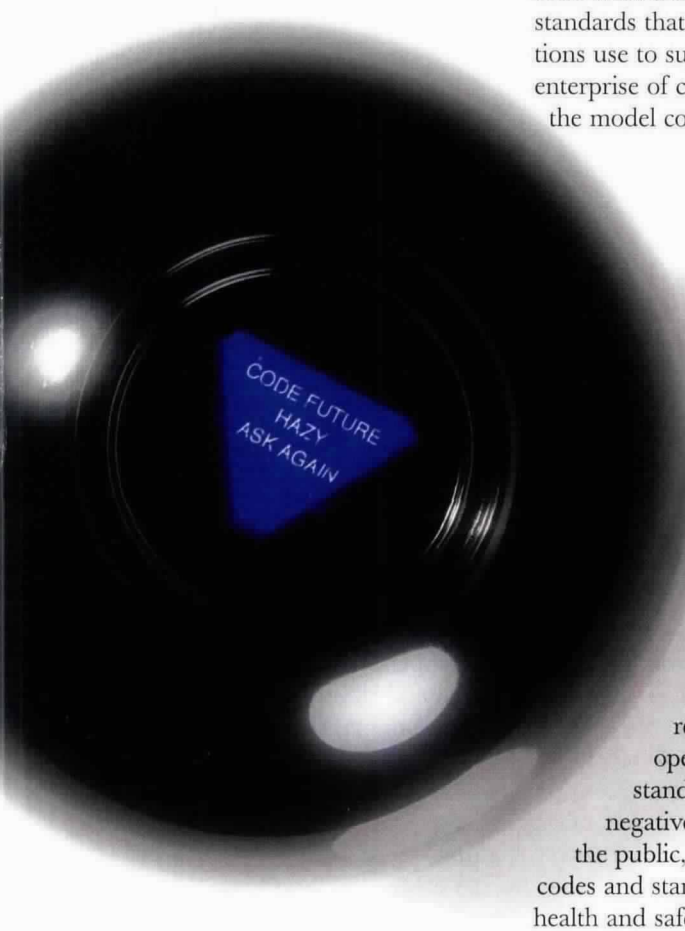
"For nearly a century, codes developed by organizations such as ASME have served to enhance public safety, lessen the burdens of government, and foster commerce and trade," Ling says. "Through a consensus process involving a broad range of technical expertise and facets of industry and public interest, equipment and products subject to state regulations can be manufactured in any part of the country for use in any other state. The process relieves individual state governments of the burden of developing their own set of technical requirements.

"These benefits are also extended to the federal and international level," she says. "Through the active participation

agency or a library."

The Fifth Circuit Court judges who dissented from the majority ruling in the Veeck case also argued that the copyright law adequately protects the public from restricted access to code requirements. They cite the doctrines of fair use and implied license or waiver, which were created to ensure that copyrighted works, including code requirements, could be taught and cited by experts, lawyers, and judges without infringing on an organization's copyright.

If the majority view in the Veeck case becomes widely accepted by the courts, argue SBCCI's friends of the court,



of producers, users, and government enforcement bodies to meet public safety objectives that incorporate technological advances, codes provide positive benefit to our economy, its industry and people. In the end, the specter of loss of sales revenues to sustain code-development work impacts not only the specific organization but the broader community at large.”

If it ain't broke, don't fix it

Would private codes and standards developers necessarily be put out of business if they lost their copyright once their work was adopted into law? The court's decision indicates that the majority of the judges don't think so.

“The decision appears to be based on certain premises we believe are inaccurate,” says Amy Marasco, ANSI's general counsel. “For example, the court suggests that, even if copyright is vitiated, the standards still will be produced by private-sector, not-for-profit organizations.”

According to Marasco, this assumption is ill-founded.

“In our experience, many developers rely on the ability to sell the resulting standards in order to underwrite the time-consuming and costly work necessary to develop these standards,” Marasco says. “If they're unable to sell their standards, there's a serious possibility that they'll decide to no longer produce this body of work. This would have far-reaching consequences on the myriad private sector standards that government bodies at all levels rely on today.”

These consequences, according to NFPA Standards Council member Rick Breezee, building official for the Metropolitan Airports Commission in Minneapolis, Minnesota, would include the loss of vital services to code users and enforcers.

“Code agencies rely on selling code books as part of bottom line, and if that bottom line is affected, it will have an impact on users and enforcers of the code,” Breezee says. “That bottom line helps generate seminars, handbooks, manuals, interpretations, opportunities



IF THE VEECK DECISION WERE TO SET A PRECEDENT FOR OTHER COPYRIGHT CASES INVOLVING MODEL CODE ORGANIZATIONS, THE CURRENT CODE-MAKING SYSTEM COULD COLLAPSE. IF THAT HAPPENS, WHO WOULD WRITE TECHNICAL CODES AND STANDARDS?

to discuss technical issues with staff.... I don't think people realize how much we rely on staff of those major code agencies to provide information to other agencies and enforcers.”

If agencies and enforcers suffer, public safety is also jeopardized, Breezee says.

“Let's face it: when the bottom line is affected, business decisions have to be made,” he says. “Cuts that affect us as code enforcers will ultimately affect citizens, from people pulling permits right down the line to the public. Any time our ability to be educated and our ability to learn more about the codes and to interpret the intent of codes is impacted, everybody suffers.”

In their amicus briefs, the friends of the court for SBCCI cite the administrative, technical, and support costs codes- and standards-making organizations incur in developing consensus codes. For NFPA alone, these costs cover hundreds of meetings nationwide for the 229 committees that draft and update codes and standards; a technical staff of engineers and fire ser-

vice experts, as well as other professional and clerical staff; the production and printing of the codes; and other substantial development costs—all of which NFPA pays for with revenue generated by sales of codes and standards.

Fire Marshal Jim Crawford of Portland Fire and Rescue in Portland, Oregon, and a member of the Standards Council, is concerned that the cost of code development will be too much for an organization to bear if it can't sell its codes and standards.

“In my opinion,” Crawford says, “code-promulgating efforts by the model code-making organizations will take a major hit if this legal opinion stands. Code enforcers will ultimately feel its impact as code-development efforts lose their principal funding source. And forcing all individuals—volunteers, technical staff, and others—involved in the code-making process to pay the full extent of development costs, not just travel expenses, would drive the costs so high that I

fear few, if any, public agencies will be able to afford to participate.”

Who would fill the void?

If the Veeck decision were to set a precedent for other copyright cases involving model code organizations, the current code-making system, says Shannon, could collapse. If that happens, who would write technical codes and standards?

“The alternatives to the current system,” Shannon says, “aren’t good. One would be to have government do it. That would be cumbersome and lead to outdated codes and standards without adequate participation by private interests. The other alternative is to have industries do it. Then we run the risk that codes and standards will be dominated by specific industries, and we wouldn’t have the broad participation we have in the development process now. Either way, if this system is destroyed, the public is going to lose.”

NFPA’s Grant says the voluntary model code-making process, which facilitates the development of national standards, originally came about because of poor regulation that relied on a patchwork of standards created by the individual states. In fact, the first *National Electrical Code*[®], published in 1897, was created by a group of technical experts and industry representatives to address the problem of multiple, often conflicting, standards.

“What you had were very localized standards,” Grant says. “In New England alone, there were over a dozen separate specs that people were following. There was no conformity. It was just nightmarish.”

Could the Veeck decision begin a trend that would take us back to the late nineteenth century?

The dissent in the Veeck case paints just such a frightening scenario.

“Without private code-creating entities,” it states, “our small towns—and even some of our larger cities, states, and agencies of the federal government—would be forced to author their own regulatory codes. Such a task would inefficiently expend the time and resources of the legislative and

executive bodies of these governmental entities, not to mention the question of available expertise.”

The dissent goes on to describe a situation in which innumerable variations of any given code could exist from one state to the next, much as they did in the late 1800s, “thereby undermining uniformity and, with it, safety and efficiency.” The dissent concludes that developing codes in this manner would generate considerable costs to the government, a burden that would ultimately fall on the taxpayer.

Despite the concerns raised by the dissent, the majority ruling in the Veeck case put forward the notion that, if private codes and standards developers stopped creating model codes and standards, government entities, working with private industry, would fill in the gap. This point of view, says Brodoff, runs contrary to federal policy as expressed in the Office of Management and Budget Circular A-119 and in the *National Technology Transfer and Advancement Act of 1995*. These federal directives, she adds, “recognize the value of model codes and standards developed by private organizations and specifically say that federal governments are supposed to adopt such codes and respect their copyright.”

In fact, by enacting the Act, Congress acknowledged the many benefits of privately developed codes and standards for adoption by reference into law.

The Office of Management and Budget’s Circular A-119, which establishes the policies promoting the federal use of privately developed standards, gives four government goals that the use of voluntary consensus standards fulfills: to save the huge costs of developing its own standards by relying on private, non-profit organizations; to create standards that serve national needs; to promote efficiency, economic competition, and long-term economic growth by developing harmonized standards; and to further the government’s policy of relying on the private sector where

possible for goods and services.

In addition, a House Science Committee report concerning the Act credits the voluntary consensus code process for contributing to the well-being of U.S. citizens, as well as lending a competitive edge in the global marketplace. A section of the report that the friends of the court cite in their support of SBCCI specifically states:

“Standards play a crucial role in all facets of daily life and in the ability of the nation to compete in the global marketplace. The United States, unlike the federalized system of most other countries, relies heavily on a decentralized, private-sector-based, voluntary consensus standards system. This unique consensus-based voluntary system has served us well for over a century and has contributed significantly to United States competitiveness, health, public welfare, and safety.”

The apparent contradiction between the Fifth Circuit Court’s decision in the Veeck case and the *National Technology Transfer and Advancement Act of 1995*, says ANSI’s Marasco, is confusing, to say the least.

“It almost appears as if the court doesn’t appreciate the extent to which government at all levels rely heavily on private-sector standards and respect the copyright asserted by the standards developers,” she says.

In the Veeck case, SBCCI and its amici curiae have taken on the task of championing the voluntary consensus codes and standards process before the Supreme Court, if given the opportunity, and on any other case that calls into question the right of model codes and standards organizations to copyright work adopted into law. Sure, they’re concerned about their bottom lines, but in end, says Breezee, it’s not about the money.

“Life, health, safety and public welfare—that’s what it’s all about,” Breezee says. “When you start to affect that, everybody’s going to lose.” ❖

ALISA WOLF is a frequent contributor to *NFPA Journal*.

■ by PAM WEIGER

In Colonial Williamsburg, safety officials have successfully balanced fire protection with historic preservation, allowing an important part of U.S. history to survive the test of time while

bringing colonial up to code

WHEN IT COMES to fire, the challenges facing historic buildings are similar to those every building faces: electrical problems, lightning strikes, arson, and candle fires. But when the structures and their contents are part of an extensive cluster of centuries-old, nationally historic buildings, the stakes are much higher. Once these structures and the items they contain are lost, they can never be replaced.

Each year, more than four million visitors flock to Colonial Williamsburg, Virginia, to wander through the 88 original eighteenth-century build-

ings in the town where the United States' founding fathers formulated and debated the democratic ideals that form the basis of U.S. society.

The buildings were restored by the Rockefeller family and later the Colonial Williamsburg Foundation to remind Americans of their heritage.

For the past 27 years, Danny McDaniel, director of Security, Safety, and Transportation for the Colonial Williamsburg Foundation, and his staff of 60 security and safety professionals have had a role in protecting those buildings, struggling daily to



preserve the cultural treasures without intruding unnecessarily on their original character.

"Clearly, fire is the most significant threat we face," says McDaniel, who is also a past chair of NFPA's Technical Committee on Cultural Resources. "But it's a huge balance issue when you're trying to put fire protection systems in an original building and you're working with curators who'd prefer not to have anything that would affect the aesthetics of the original fabric."

At Colonial Williamsburg, historic landmarks house hotels, restaurants, shops, and offices. That means they must address all the safety issues associated with the specific occupancy,

second floors remain unsprinklered, but the water main has been sized to accommodate them whenever those areas undergo renovation.

By tying fire protection upgrades to renovation projects, McDaniel and his crew have managed to fully or partially sprinkle 25 to 30 percent of Williamsburg's exhibition buildings.

"Our purpose during renovations is to bring a building completely up to code without anyone being able to tell we did anything," McDaniel says. "And we almost did that with the Williamsburg Inn project."

Built in 1936, the 115,000-square-foot (10,684-square-meter) Williamsburg Inn relied for fire protec-

ANTICIPATING CHANGE IS IMPORTANT. For instance, the Capitol building's first and second floors remain unsprinklered, but the water main has been sized to accommodate sprinklers whenever those areas undergo renovation.

while dealing with the delicate issues of historic preservation. To balance both requirements, Williamsburg officials typically tie the installation of fire protection systems to maintenance-related renovations using the foundation's renovation and renewal program. This program is designed to keep up with significant maintenance issues involving roof replacement, HVAC, and electrical work, to bring buildings up to code and install state-of-the-art systems

"We wouldn't take a building out of inventory just for sprinklers," McDaniel says. "But when there's another major renovation, we'll upgrade for fire protection."

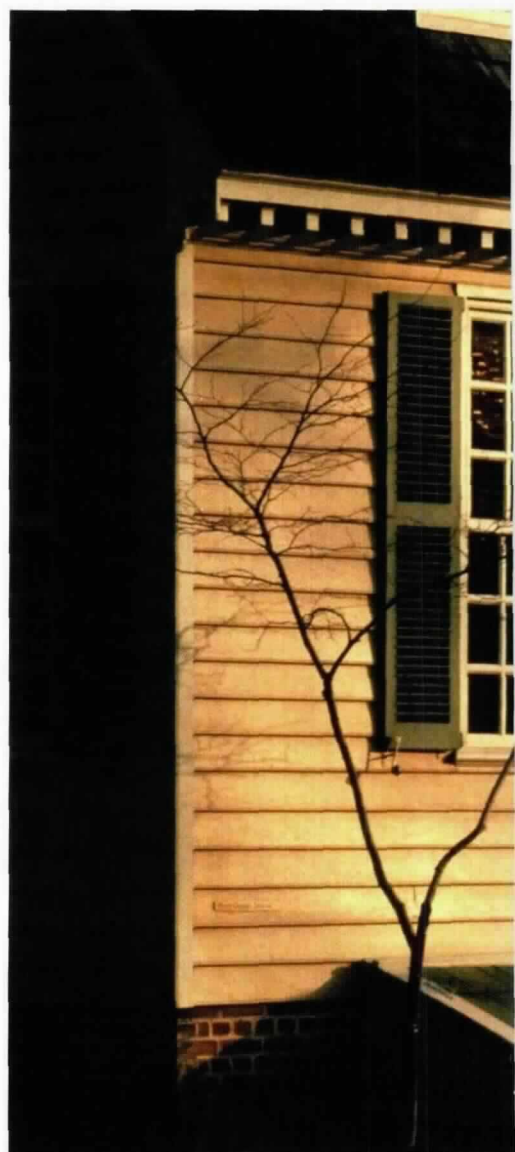
Four years ago, for example, the Colonial Capitol Building was shut down for extensive basement work, so contractors installed a sprinkler main in the basement at the same time. Last year, when the Capitol's attic and third floor were being renovated, workers installed sprinklers in those areas, as well. The Capitol's first and

tion on an outdated heat detection system from the 1930s, "a pneumatic-type system you'd see in a museum," according to McDaniel. Three additions to the three-story inn over the years resulted in 100 hotel rooms that are typically occupied year-round.

The 18-month renovation completed last year at a cost of more than \$12 million, included installing wet-pipe sprinklers throughout the structure and an addressable fire-alarm-panel detection system.

"That project was a simple one because they incorporated more than the fire safety code would have required," says John Catlett, building official for the city of Williamsburg. "Now, I think that building would function as well as any newly constructed building out there."

While Virginia uses the model building codes published by Building Officials Code Administrators (BOCA) and the International Code Council, Catlett says any recognized national standard or code can be con-



sidered when evaluating safety modifications. Because BOCA's code is very vague on historic buildings, Catlett says officials turned to NFPA 914, *Fire Protection in Historic Structures*, and NFPA 909, *Protection of Cultural Resources*. These two documents served as the framework for setting up a team-oriented process that enabled users, owners, contractors, and code officials to communicate with each other from the beginning.

"I would encourage this kind of team approach on everything, starting with the pre-construction meeting," Catlett says. "That way, we're not an agency that just says 'no.'"

Catlett's approach to the Williamsburg Inn project was to reduce the



A person in period dress walks past a clapboard house at historic Colonial Williamsburg, Virginia.

code issues to their intent. In other words, he asked participants to use the performance-based approach of working backward from the projected goals of the project to the specific methods of achieving those goals.

"There aren't prescriptive ways to handle every problem encountered in historic property," says Wayne Moore, director of New England Operations for Hughes Associates, Inc., a fire-protection-engineering firm that consulted on the Williamsburg Inn project. "One of our roles is to help the building officials understand what the fire protection systems we're suggesting can do for them."

Catlett says it took him a long time as a code official to learn that buildings don't always need the most modern features to be safe.

"If new construction codes are applied to any existing building, it can't comply," he says. "Life safety of the building is the bottom line."

Because Moore is a fire protection engineer who's worked on other historic properties, including Emerson College's Majestic Theatre in Boston, he says he was able to speak the same language as the building official, making it easier to "come to a meeting of the minds."

"Integrating NFPA 914 into the

planning and renovation process resulted in a collaborative effort involving all parties in designing the fire protection system," says McDaniel.

Using extensive credit/debit trade-offs during the modification process, the committee brought the inn up to complete compliance with NFPA 13, *Installation of Sprinkler Systems*, and NFPA 72[®], *National Fire Alarm Code*[®]. Every room, including the closets, bathrooms, and the attic, was sprinklered, and a smoke detection system was installed throughout the building. Each room is now equipped with heat detectors, which sound a trouble signal, and smoke detectors, which sound

the building alarm.

The inn has an addressable fire alarm system supplied by Notifier.

By completely sprinklering the inn, the project committee was able to offset egress compliance issues. Officials allowed several open stairways to remain unenclosed and guestroom doors to remain slightly smaller than currently specified in the code. A number of other minor issues were also "traded" during the process, as code officials looked at the totality of the building's safety, not the individual systems.

"That's exactly what [NFPA] 914 espouses: you work out a deal on what is an equivalency," McDaniel says.

and delayed the opening of an income-producing property if we'd been required to rebuild the wall with masonry block," McDaniel says.

Another unpleasant surprise occurred three weeks after the first section of the inn reopened, when a newly installed quick-response glass bulb sprinkler in the attic activated. By the time maintenance crews located the sprinkler and turned the water off nearly 10 minutes later, it had flooded five rooms on two floors occupied by Virginia Senator John Warner and his golfing party, causing substantial damage. Brand-new carpet, specially woven in Ireland, had to be ripped up

Guests expect to see it."

Equipment included

Fire departments generally expect to see their tools, as well, but, in historical structures, things such as alarm panels and valves are typically hidden from view. In Colonial Williamsburg, valves are hidden in barrels, and one fire department connection is tucked inside a tree stump. That makes pre-incident planning even more critical for the departments that respond to emergencies in historical properties.

"Typically, there's no street address, either, so fires are dispatched by the building's name," said Deputy Chief

IN MOST OF THE INN'S PUBLIC PLACES, the renovation team used concealed sprinklers to preserve the historic aesthetics. Smoke detectors required a modest change in the appearance of the ceilings, but the white detectors blended with the white ceiling paint, resulting in very little visual intrusion.

"This codifies it for historic buildings. The fact that [NFPA] 914 and [NFPA] 101[®] [*Life Safety Code*[®]] alternatives were in print made the building official willing to accept them."

Construction begins

As with any historic building, planning is precarious until the work actually begins because there may be surprises when old walls are opened up. When workers went into a "fairly good" one-hour-rated wall in the inn's stairway, for example, they expected to find solid material beneath the plaster.

Instead, they discovered ceramic-type blocks that were broken and cracked in many places. After an exhaustive investigation, the renovation committee located a spray-on fireproofing material that, according to the manufacturer's documentation, could provide the required fire-resistance rating. Based on this documentation, building officials agreed to allow workers to fireproof the wall instead of rebuilding it.

"It was an unpleasant surprise that could've been extremely expensive

after what McDaniel describes as "not a good day for sprinklers."

When tests on the other quick-response sprinklers revealed a high failure rate, officials replaced the 3-millimeter sprinklers in the attic with standard-response, metal sprinklers. Fortunately, the renovation was still under contract, and the contractor replaced the sprinklers.

In most of the inn's public places, the renovation team used concealed sprinklers to preserve the historic aesthetics. Smoke detectors required a modest change in the appearance of the ceilings, but the white detectors blended with the white ceiling paint, resulting in very little visual intrusion.

Interestingly enough, camouflaging the fire protection systems in this way revealed an unexpected dichotomy of viewpoints. While the historians were striving for zero change in appearance, the hotel's operators actually thought the fire protection systems were too subtle.

"It had been a Mobil Five-Star property until 2000," McDaniel says. "At that level of luxury, people expect to have first-rate protection.

Bert Geddy of the city of Williamsburg Fire Department. Firefighters in his department conduct an extensive, daylong walk-through of the historic property each January to familiarize themselves with the buildings and their fire protection systems.

"Some buildings still have seaweed for insulation, so we meet with their architects to get a handle on which buildings pose special hazards," says Geddy.

Operationally, responding to emergencies in historic properties can be tricky. Narrow staircases and small doors can present a challenge in getting victims out, and firefighters in full turnout gear and breathing apparatus can be overwhelmed inside cramped, antique-filled structures. They're taught to be extremely careful and automatically take extra precautions that no one would expect in nonhistorical occupancies, such as putting down hall runners to protect valuable furnishings and forcing doors or breaking windows only as a last resort. Unless they're confronted with a life-or-death situation, firefighters wait for security personnel to bring them a key.



The installation of fire protection equipment at the Williamsburg Inn was done to provide state-of-the-art protection while causing the fewest intrusions to the architectural style of Colonial Williamsburg's buildings. The renovations to the inn took 18 months.

"As part of our corporate culture, we help our people acquire a respect for cultural properties," says Geddy, who serves on the NFPA Cultural Resources Committee.

Deputy Chief Geddy has seen a lot of changes in Colonial Williamsburg—and several serious fires—during his 35 years with the fire department. In fact, the department was established as a career department in the late 1940s in the wake of a fatal fire sparked by a hot glue pot at the Brick House Tavern in Colonial Williamsburg.

The property has made significant progress installing built-in protection systems during the last 20 years, he says—so much so that, today, the fire department responds to automatic alarms in the complex weekly. Geddy's particularly impressed with the AnaLASER® air-sampling devices from Fenwal Protection Systems that were installed in the Capitol Building and two other locations to monitor air quality. He describes them as a "sniffing, vacuum device that's much more sensitive" than traditional smoke detectors and most often used in computer rooms.

Because open burning, which is generally banned in the city, is allowed for some historic interpretive programs at Colonial Williamsburg, lanterns or candles have occasionally ignited fires. However, automatic alarms are usually caused by workers using cutting tools, by heating devices, or by electrical malfunctions. An electrical fire nine years ago caused \$1 million damage to

a newer hotel building in the complex that wasn't an historical structure. But for an historic district with 550 structures, "there hasn't been much of a fire problem," according to McDaniel.

Security issues

Security, particularly in the wake of September 11, is a significant component of fire protection. Colonial Williamsburg officials worry that, as a cradle of U.S. democracy, the property could be a target for a symbolic attack on the United States. Another, more mundane security concern is arson, the number one cause of library fires, making the large research library at Colonial Williamsburg a potential target, as well.

The Colonial Williamsburg security force monitors access to buildings and inspects the grounds at night, but McDaniel says codifying security issues is difficult. Still, he expects the security requirements in NFPA 909 to be beefed up during its next revision cycle.

"You can decide what kind of fire alarm is needed for a specific occupancy, but you can't dictate the same with security systems because there are too many factors," he says.

Training for Colonial Williamsburg's 3,500 employees and 1,000 volunteers is another important component of fire prevention. Paid personnel undergo basic life-safety training, as well as site-specific training for their work location. Before the Williamsburg Inn reopened after renovation, housekeepers, food service workers, and all other hotel staff

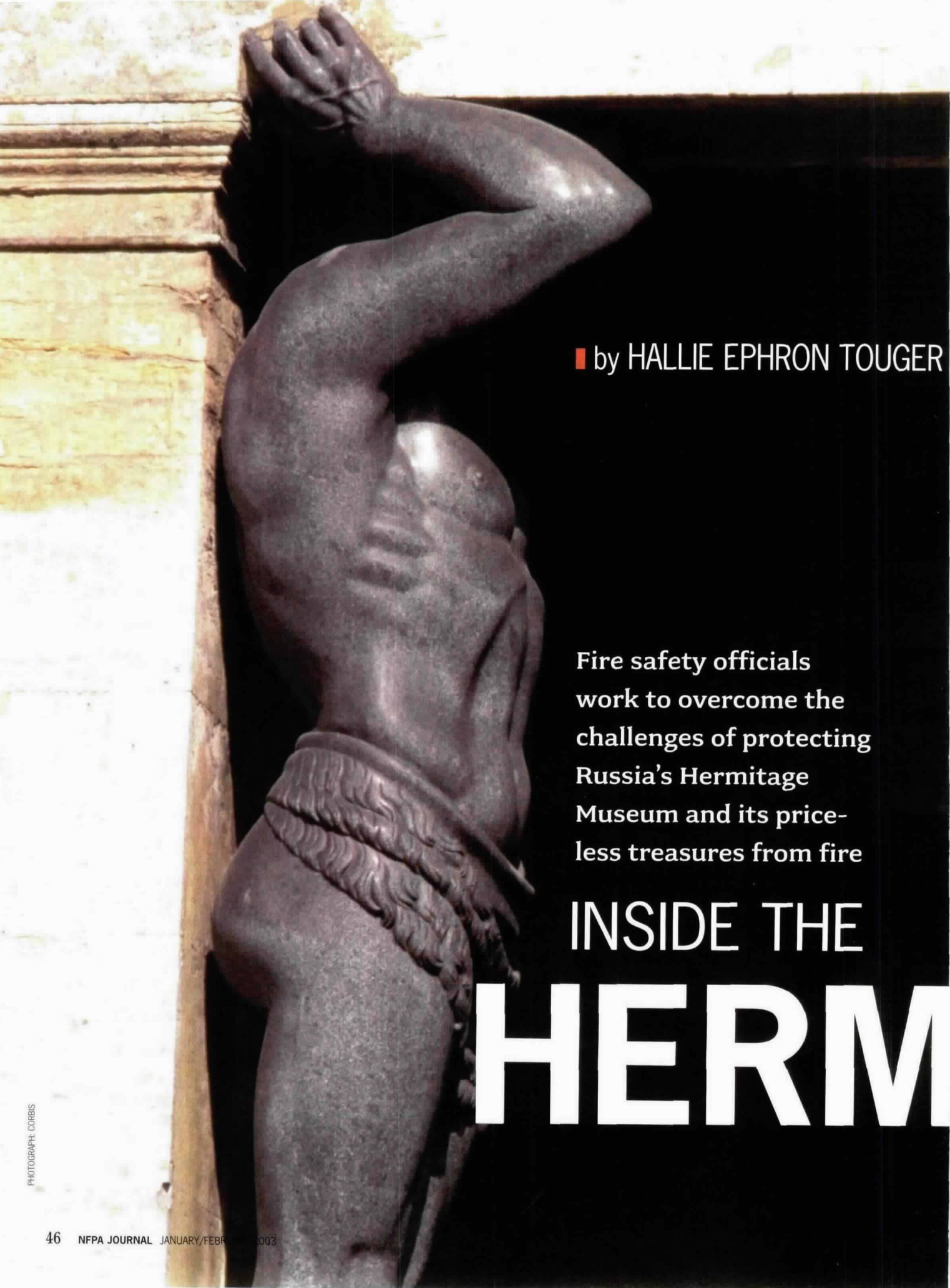
underwent additional training to familiarize them with the building's new fire protection system. Volunteers receive a scaled-back version of the training, specific to the sites in which they serve. Managers receive a second level of training that includes threat assessment.

While people travel from other parts of the world to study what Williamsburg has done to protect its cultural treasures, officials in Colonial Williamsburg continuously compare their quality of work with that of other historical sites, looking for the best fire protection available. They studied the Library of Canada's research in the area of mobile compact storage, for example, and incorporated the lessons learned into the sprinkler system installed at Williamsburg's Rockefeller Research Library. But every historical structure is different.

"What works for me might not work for Mount Vernon," McDaniel says. "The buildings are all so different in their construction features, and the amount of original fabric makes a huge difference in what you can do."

Even in a place where time stands still, renovating and upgrading fire protection must constantly move forward. McDaniel and others in Colonial Williamsburg are now planning their next project: the complete renovation of the Williamsburg Lodge, one of Williamsburg's five hotels. ❖

PAM WEIGER is a freelance writer based in Orlando, Florida.




■ by HALLIE EPHRON TOUGER

Fire safety officials work to overcome the challenges of protecting Russia's Hermitage Museum and its priceless treasures from fire

INSIDE THE HERM

PHOTOGRAPH: CORBIS



WHEN PROTECTING HISTORICAL

buildings containing irreplaceable works of art, the goals of protection and preservation compete for attention. Often, the challenge of protecting the structure and its contents without damaging or even altering their essential character calls for the creative application of performance-based codes and the careful installation of state-of-the-art fire suppression and detection technology.

Officials at the Hermitage Museum in St. Petersburg, Russia, face the formidable task of protecting and preserving a vast imperial palace nearly three centuries old that's home to some of the world's greatest art treasures. With limited resources, the museum has had to set priorities, taking care of critical needs first and substituting manpower for technology where feasible.

A repository of world culture

The Hermitage Museum is a unique repository of world culture, comparable only to the Louvre in France. It's composed of seven historic buildings occupying 1,372,162 square feet (127,478 square meters), and a new restoration and storage complex is scheduled for completion this year. The museum's holdings include an estimated three million works of art, only a small fraction of which can be exhibited at any one time.

The buildings themselves are also artistic trea-

ITAGE

tures. The largest is the Winter Palace, built on the banks of the River Neva in the mid-1700s as the main residence of the Russian tsars. In 1763, Catherine the Great became its first royal occupant. Successive buildings include the Small Hermitage, which was completed in 1775; its first-floor gallery is a replica of the one painted by Raphael and his pupils in the Vatican Papal Palace. The royal family added the Hermitage Theater in 1787 as a venue for imperial performances. The small, exquisite amphitheater, with walls and columns of faux marble alongside niches containing Greek statuary and rising tiers of seats, is still an active performance space.

The task of protecting and preserving the Hermitage is a challenge for the modern fire protection engineer. Ceremonial lobbies, open stairways, generous corridors, and historic doorways are incompatible with modern egress requirements. Many of the walls are made of brick, at least 3 feet (0.91 meters) thick, making sprinkler installation difficult, if not impossible, and there are no barriers to prevent fire from spreading through attics and basements. And there would be no lack of fuel if a fire were to start: the antique furniture, paintings, and tapestries are highly flammable and vulnerable to water damage.

A history of vigilance

Hermitage occupants and officials have long been concerned about fire, and several incidents in the past have amply demonstrated its vulnerability. In 1836, for example, the Winter Palace burned.

"It all started because contractors threw some debris down what they thought was a cavity between walls, but what was, in fact, the chimney for a caretaker apartment in the basement," says Bob Kaszanits, president of the Hermitage Museum Foundation of Canada, which provides support to the Hermitage. "The fire spread up to the attic and throughout the building. And all because a fireplace lacked a proper chimney." The museum staff's



A boy skates in front of the Winter Palace in St. Petersburg, Russia. The Hermitage has a collection of nearly 3 million items in the Romanov's Winter Palace and surrounding Hermitage buildings that date from the 18th and 19th centuries.

quick response saved all the artwork and the structure was rebuilt within a few years.

The incident left a keen awareness of the potentially devastating effects of fire, however. That preparedness paid off during World War II, when the buildings of Hermitage withstood the 900-day siege of Leningrad, as St. Petersburg was then called. Officials removed art objects from the museum on June 23, 1941, the day after Hitler's first invasion, and the buildings survived despite German bombardment.

"They were constantly vigilant," Kaszanits says. "Their way of putting out fires was to put sand in each of the rooms, then stand watch literally 24 hours a day throughout the siege with shovels at the ready, quickly putting out any fires."

A similar kind of vigilance continues today, as the institution relies on early detection and early response. In part, it's been an economic necessity—chronically short of funding, the museum can't afford to install fire suppression systems throughout the vast complex.

Only the Hermitage Theater and the new storage and renovation complex have been sprinklered.

Approximately half the sprinklers are part of a water-fog system, according to Alexey Bogdanov, deputy director for Engineering Systems at the Hermitage. Water fog is good for preserving art and furnishings because "fog water droplets have more surface area with which to absorb heat, thereby keeping the heat rate down so there's no ignition. On top of that is the added benefit of being able to scrub smoke out of the air," explains Alan Fraser, NFPA staff liaison handling NFPA 909, *Protection of Cultural Resources*. Paintings in rooms where fires are suppressed by a water-fog system may suffer little if any smoke or soot damage, he says, and they may escape water damage since the water-fog system uses so little water.

According to Bogdanov, some rooms in the complex are equipped with gas firefighting systems instead of sprinklers, and all the rooms are equipped with portable fire extinguishers.

Over the last decade, sophisticated smoke detection systems have been



PHOTOGRAPH: CORBIS

installed in the Winter Palace, the Hermitage Theater, and the new storage and restoration complex. And the museum makes up in manpower and vigilance what it lacks in suppression systems. An around-the-clock fire and security command center, along with a resident firefighting unit intimately familiar with the vast complex, are credited with keeping fire from causing irreparable damage in recent years.

Fifty people work at the on-site fire station. Seven of them are there around the clock at the control panel and constantly monitor the museum's rooms. They provide the Hermitage with its primary protection and, if there should be a fire, direct the responding city fire brigade to the site.

Sophisticated detection system from Honeywell

The engineers at Honeywell who designed the fire detection system for the Winter Palace were acutely aware of the need to both protect and preserve the buildings' character.

Roger King, Honeywell fire product manager for Europe, conducted a survey of the Winter Palace in 1994 and presented a proposal for the detection system.

"At that time, Honeywell was one of the only western companies in Russia," King says, "and we were the premier supplier of fire alarms in the Russian marketplace."

King recalls the sense of awe he felt when he began the survey.

"For me, the Hermitage was a must-go place since the time I was about 15. Without anything inside it, the buildings themselves are fabulous, very ornate from floor to ceiling."

A system that required extensive drilling into walls and visible hardware and cabling was out of the question.

"The challenge was to create a highly sensitive, reliable system and, at the same time, to make sure we put something in there that didn't detract from the building itself. We wanted to hide everything," says King.

It wasn't only the exhibit spaces that had to be surveyed.

"Only about 25 percent of the treasures are on view," says King's colleague, Gary Wuetig. "We had to protect all of the rooms, all of these masterpieces, many of which were on gigantic rollaway walls right next to one another in the basements."

King surveyed every single room—1,760 of them as he recalls. He even

surveyed the roof.

Wuetig puts the problem in context. "Historic cultural buildings have significant risks associated with them," he says "It doesn't take long for a place to catch fire, and the loss of cultural heritage can be enormous. Therefore, it's very important to have an early warning system to respond to the risk of fire. There's a lot of wood in the structure. The roof itself is a major hazard, and there's electricity. Some of the buildings hadn't been well maintained. There's a lot of cloth, material on the walls, curtains, oil paintings that would burn quickly. Although there's brick construction in some areas, in others, there's lathe over plaster—a wood frame and thin willow across it, then plaster on the willow frame. A structure like that is tinder dry."

Honeywell presented a design for a sophisticated early-warning system that would react very quickly to a small fire so that the on-site fire brigade could contain it. Their design called for installing reflective beam detectors in every room using the FS 90 Plus, an addressable analog system that can pinpoint an alarm's location, a key requirement in such a large complex.

The smoke detectors can be adjusted,



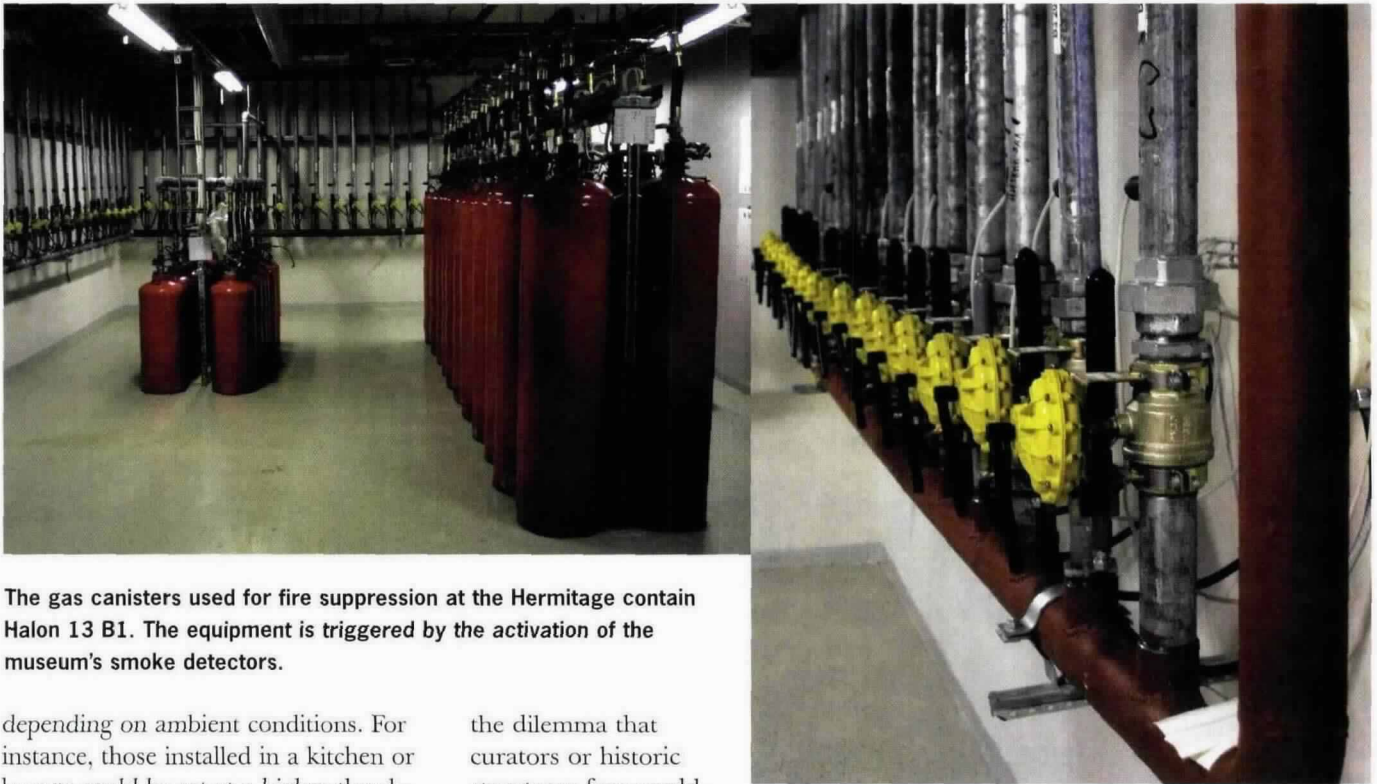
Early Detection Works

The system works. Nicholas Artim of Fire Safety Network, a Vermont-based international fire protection engineering, and consulting firm, recalls visiting the Hermitage in 1997. Artim serves on the NFPA Cultural Resources Technical Committee.

"The fire detection system was credited with averting a fire just two weeks before I arrived," he says. "A light fixture overheated in an East Asian arts collection space. The fire was smoldering, very close to igniting to full-flame conditions and getting into the attic, when the smoke sensor picked it up and sent the signal through. The fire department responded and took care of the problem."

The resident fire brigade, which is on site 24 hours a day, is a major strength.

"They have a strong level of commitment to keeping aware of what hazards exist in the building," says Artim. "There's a strong fire prevention effort. They know the building intimately, so if there's a fire, they know exactly where it is and how to get there quickly."



The gas canisters used for fire suppression at the Hermitage contain Halon 13 B1. The equipment is triggered by the activation of the museum's smoke detectors.

depending on ambient conditions. For instance, those installed in a kitchen or lounge could be set at a higher threshold than those in a painting gallery. An alarm triggers a signal that's relayed to a central command control room in the security center. The center contains a mimic panel and a map on the wall equipped with light-emitting diodes that immediately indicate the location of the incoming alarm.

King and his colleagues were committed to making the system virtually invisible, which was no small feat considering that they had to install about 20 miles (32 kilometers) of orange fire-retardant cables.

"The structure itself enabled us to be a bit inventive in terms of where we placed the cables," King says. "Partway up a wall, there may be something like a picture rail or an ornate ceiling molding. We hid all the cables on ledges, in the backs of crevices, so that, from the ground or staircases, you couldn't see them."

Work was begun in 1994 and completed in two phases. Honeywell provides ongoing maintenance.

Preserving and protecting

With the added constraint of limited funding, the Hermitage Museum faces

the dilemma that curators or historic structures face worldwide: how to protect the structure while preserving its historical value.

According to Jack Watts, director of the Vermont-based Fire Safety Institute and a member of the Technical Committee on Cultural Resources, inherent conflicts between code requirements for life safety and preservation standards discourage the alteration of historic structures.

"Rigid or indiscriminate application of building codes to meet fire safety regulations can compromise or alter important architectural features of historic buildings," says Watts.

He points out that preserving our heritage from fire is a topic that's currently being addressed around the world, especially in Europe. The 2001 CIB World Building Congress in New Zealand identified a "guidance document on rational fire safety engineering approach to fire safety in historic buildings" as one of its seven projects of highest priority.

The most recent edition of NFPA 914, *Fire Protection in Historic Structures*, specifically addresses these issues by including performance-based alternatives to prescriptive code. Performance-based

compliance is achieved by showing that a proposed fire safety plan meets specified objectives.

"Performance-based fire safety has the most impact when there's conflict with traditional fire safety measures imposed by regulations," says Watts. "Fire in historic properties is one such area."

"In historic preservation, the overall fire safety goal is to preserve cultural heritage from fire and fire protection measures. Life safety, property protection, and operational continuity take on different proportions when preserving the building in its original form is a transcending management goal. Historic significance is a marked, but immeasurable, value to be protected. Its loss to fire is forever, and there can be no replacement. At the same time, the means for protection can't so intrude on authenticity as to destroy the value being protected."

He adds that, for preservationists, "an uncontrolled fire, no matter how small, is unacceptable if it can do irreparable damage to historic fabric." ❖

HALLIE EPHRON TOUGER is a frequent contributor to *NFPA Journal*.

Lost Art

On September 11, 2001, America's loss extended beyond the overwhelming death toll to include countless artistic and historical treasures that can never be replaced

THE TRAGEDY OF September 11, 2001, is second to none in U.S. history, and Americans will forever remember the nearly 3,000 people who died that day. As if the catastrophic loss of life weren't bad enough, the terrorist acts also destroyed millions of dollars worth of art and historical artifacts in New York City and Arlington, Virginia. In fact, PricewaterhouseCoopers estimates that property insurance claims alone will eventually reach billions of dollars in what the Insurance Journal has called the largest single insurance disaster in world history.

At the time of the incident, the World Trade Center and the Pentagon were home to an estimated \$100 million worth of art, historical archives, and artifacts. At least 500 corporations, non-profit organizations, and municipal, state, and federal depart-

ments or agencies also stored their records, archives, and libraries in those buildings. At the World Trade Center and nearby buildings alone, the property losses sustained by art and historical institutions are expected to reach tens of millions of dollars. At the

Pentagon, which is self-insured, the attack destroyed 24 works of art from the collections of the U.S. Army, Navy, Air Force, and Marine Corps and considerably damaged another 40. The Pentagon library, although eventually recovering most of its collection, was out of commission for months after the disaster.

To assess the damage cultural and historic institutions in Lower Manhattan and at the Pentagon, the Heritage Emergency National Task Force commissioned a report entitled "Cataclysm and Challenge: Impact of September 11, 2001 on Our Nation's





Alexander Calder's "WTC Stabile (Bent Propeller)" (1971), Joan Miró's "WTC Tapestry" (1974), and the remains of Fritz Koenig's "Sphere for Plaza Fountain" (1969).

Cultural Heritage." The report describes the artwork, historical artifacts, archives, and libraries in the seven buildings of the World Trade Center complex and in adjacent buildings, and lists damage to the artwork at the Pentagon and to its library. The report was based, in part, on the results of a survey sent to 122 cultural and historic institutions in or near the World Trade Center aimed at assessing the level of damage they sustained, how prepared they were to cope with disaster, and how they responded in the aftermath of the attacks.

Jane Long, director of the Heritage Emergency National Task Force, says one of the most significant results of the survey was the discovery that collecting institutions need to do a better job planning for continuity of operations.

"The collections of some institutions were completely destroyed," Long says. "Other museums and archives, though, sustained relatively moderate damage initially, but the damage got worse over time because the institutions weren't prepared. It really was a surprising result, but there's a great need to be much more attentive to the continuity of operations following a disaster."

Long says the longer damaged artwork sits without attention, the more likely the damage is to worsen. Mundane issues at many institutions, such as the lack of cleaning equipment or materials needed to stabilize the environment, contributed to damage weeks after the initial attacks.

"It would seem that addressing this aspect of emergency preparedness is

something virtually every collecting institution in the country ought to address," Long says.

The Heritage Emergency National Task Force, established in 1995, is a partnership of 34 federal agencies and national non-profit organizations, led by the Federal Emergency Management Agency (FEMA) and Heritage Preservation, Inc. The task force was founded as a result of the 1991 San Francisco earthquake and Hurricane Hugo in 1989 as a way to help libraries, museums, archives, and historical sites protect themselves from natural and other disasters. The task force preaches the need to develop emergency plans, teaches loss-mitigation techniques, and provides expert information on response and salvage when a disaster occurs. The primary financial supporters of the "Cataclysm and Challenge" report were the National Endowment for the Humanities and the Bay Foundation of New York City.

The extent of the losses

Among the artworks destroyed on September 11 were several by world-renowned artists, including Pablo Picasso, David Hockney, Roy Lichtenstein, and Ross Bleckner. Cantor Fitzgerald, the bond brokerage firm on the 105th floor of Tower One that lost all its employees working in the building that day, also lost everything in its "museum in the sky" collection, including drawings, casts, and sculptures by the great French sculptor

Auguste Rodin. Reportedly, this privately owned collection was worth millions.

More than 100 works of art owned by the Port Authority of New York and New Jersey were also on display in the vast public spaces of the 16-acre (0.16-hectare) World Trade Center complex, including works by Alexander Calder, Louise Nevelson, Joan Miró, and Masayuki Nagare. Perhaps the most recognizable among them were two huge outdoor sculptures, Fritz Koenig's "Sphere for Plaza Fountain" and James Rosati's "Ideogram." After the attacks, virtually everything inside the buildings was gone, and only the Koenig piece, although badly damaged, survived outside, where it's on display again as a symbol of hope and survival. According to the Heritage Emergency National Task Force report, this public art was worth an estimated \$8 million to \$10 million. Copies of the report are available at www.heritagepreservation.org/NEWS/Cataclysm.htm.

The Port Authority also lost archives dating back to the 1920s that documented the construction of many New York City landmarks, including the World Trade Center itself. Among other artifacts that were destroyed were thousands of pieces from an eighteenth-century African burial ground and more than one million artifacts from the nineteenth-century working-class neighborhood of Five Points.

In spite of these irreplaceable losses, stories of discovery and resourcefulness

Cultural Heritage Resources for Disaster Preparedness, Response, and Recovery

American Institute for Conservation (AIC)
Washington, DC
(202) 452-9545

AIC provides referrals of conservation professionals to the public. The AIC disaster recovery page is at <http://aic.stanford.edu/disaster/>.

AMIGOS Library Council
Dallas, Texas
(800) 843-8482

Amigos Preservation Services (APS) are available to archives and libraries in the Southwestern U.S., primarily the states of Arizona, Arkansas, New Mexico, Oklahoma, and Texas, with planning activities and recovery from damage caused by various emergency situations, including natural disasters. Prior to, or following an emergency, APS can provide information, guidance, referrals to local resources and on-site assistance as required.

Conservation Center for Art and Historic Artifacts (CCAHA)
Philadelphia, Pennsylvania
(215) 545-0613

Among its conservation programs, CCAHA provides surveys to assist organizations with preservation planning, workshops and seminars, internships, and emergency assistance.

Heritage Preservation
Washington, DC
(202) 634-1422

A founding partner of the Heritage Emergency National Task Force.

Library of Congress Preservation
Directorate
Washington, DC
(202) 707-5213

Emergency Drying Procedures for Water Damaged Collections. Concise information, broadly covers air-drying of paper, framed items, books, photographs, and recovery of water-damaged collections with mold.

Emergency Preparedness for Library of Congress Collections. This publication provides detailed guidelines for an emergency preparedness plan. Among the topics covered are risk assessment, communication systems, supplies and training.

Minnesota Historical Society
St. Paul, Minnesota, Conservation Department, (651) 297-1867
Information on salvaging personal belongings, historic buildings and government records damaged by natural disasters.

National Archives and Records
Administration
College Park, Maryland
(301) 713-6705

Vital Records and Records Disaster Mitigation and Recovery focuses on identifying and protecting records vital to conducting business under emergency conditions or protecting the legal and

financial rights of the Federal government. Also recommends policies and procedures for damage assessment and implementation of record recovery.

Northeast Document Conservation Center
Andover, Massachusetts
(978) 470-1010

A 1999 online Preservation Manual including worksheet for outlining a disaster plan, suppliers list, and salvage information. As part of its Field Service, NEDCC offers emergency assistance for institutions and individuals with damaged paper-based collections. NEDCC provides free telephone advice 24 hours a day if a disaster occurs.

SOLINET
Atlanta, Georgia
(404) 892-0943

Web site, www.solinet.net, includes Contents of a Disaster Plan, Disaster Recovery Services and Supplies and list of Internet disaster resources.

The Upper Midwest Conservation Association
South Minneapolis, Minnesota
(612) 870-3120

A nonprofit regional conservation center working in the Upper Midwest. Emergency assistance is a high priority for the Field Services Department. Assistance in emergency preparedness planning is provided in the form of telephone consultations, on-site visits, and workshops. The Field Services Department is available 24 hours a day to assist in emergency response and recovery.



Jim Dine's "Pink Strelitzia" (1980), one of the pieces lost by Citigroup.

also emerged. "Bent Propeller," a stabile by Calder, was one of the best-known works of art at the World Trade Center. Officials assumed it had been destroyed along with the hundreds of other pieces, but shortly after the disaster, the artist's grandson, Alexander Rower, began distributing flyers describing the sculpture to recovery workers. Consequently, more than 35 percent of the sculpture has been recovered. Whether it can be reconstituted hasn't yet been determined.

Some cultural institutions near the World Trade Center survived the devastation, either through fate, as in the case of St. Paul's Chapel, or, in the case of the Museum of Jewish Heritage, through sound implementation of an emergency plan.

St. Paul's Chapel, which sits a block north of the World Trade Center site, is the oldest public building in continuous use in Manhattan and its only surviving colonial church. George Washington prayed there before his inauguration, and the first rendition of the Great Seal of the United States hangs above the pew where he knelt. Remarkably, the church survived with little more damage than a thick coating of dust and ash.

Even more inspiring is the story of the Museum of Jewish Heritage in Battery Park City, just south of the World Trade Center. Just minutes after the first jet crashed into Tower One, the museum's fire alarm system began an automatic shutdown of outside air vents. When Lower Manhattan lost power several minutes later and the automated procedures stopped, the museum's engineers climbed onto the roof and manually closed the remaining vents, even as law enforcement began evacuating the area.

Two days later, when a few museum employees were allowed to reenter the building for a quick inspection, they found no damage to the structure or its collection, not even a speck of dust—all because the vents had been properly closed and the water turned off.

Other institutions weren't as lucky or prepared, and many suffered heart-

wrenching losses. Two blocks south of the World Trade Center, on West Street, stood the West Street Building, built in 1907 by Cass Gilbert, a prominent architect of the early twentieth century who later designed the Woolworth Building, one of the first true skyscrapers. The West Street Building was the headquarters of the Helen Keller Foundation, and its archives contained rare documents on the causes and treatment of blindness, as well as photographs, historical files, first editions of books, and letters written by Helen Keller. The entire collection about this remarkable woman is gone.

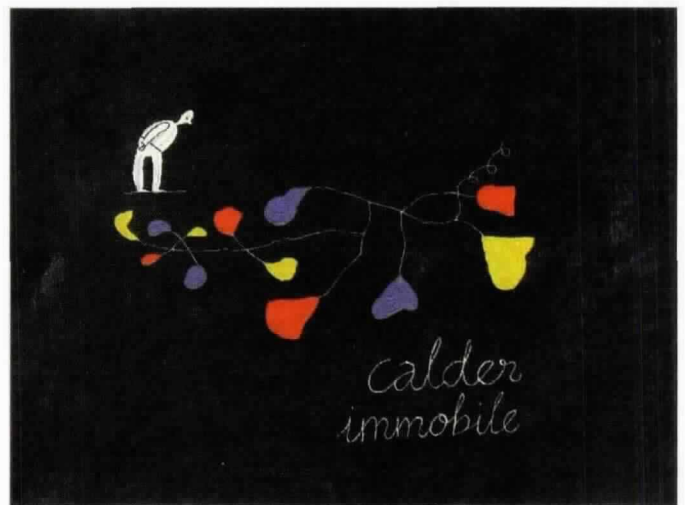
On Cedar Street, a block away from Tower Two of the World Trade Center, stood St. Nicholas Greek Orthodox Church. For nearly a century, this tiny church served the needs of the Orthodox Christian community on Lower Manhattan, housing the relics of St. Nicholas and St. Katherine and a magnificent collection of old gold chalices, candelabra, crosses, and icons. Several of the icons were gifts from Tsar Nicholas II of Russia. On September 11, the church and its contents were demolished. Recovery workers found twisted candelabra and several candles in the debris, the only physical evidence that St. Nicholas Church ever existed.

At the Pentagon, weeks passed before librarians were able to assess the damage to the institution's large military library and archives. Fires fed by jet fuel burned for nearly a week, and the library remained off limits for several more weeks while federal agents conducted their criminal investigation. By the time the librarians were able to return, they found the facility overgrown with toxic mold.

Ultimately, library officials were able to save about 99 percent of the library's collection, and none of the historical material was damaged. Because of the disaster, however, about a month passed before American military experts had access to the library's crucial information about the Soviet Union's invasion of Afghanistan in the 1980s.

Survey results

Only 46 percent of the institutions the Heritage Emergency National Task Force surveyed had a written emer-



gency plan and only 42 percent had staff trained in disaster response procedures. Sixty percent of respondents had a current collections catalogue or inventory, but more than half didn't keep any off-site record of their inventory. Had the destruction in Lower Manhattan been more widespread, many collecting institutions would have been left with no complete record of what they'd lost.

"The survey results show that there are significant gaps in preparedness," says Lawrence L. Reger, president of Heritage Preservation. "Quick-thinking staff members who turned off air-intake systems saved valuable collections from corrosive soot and debris. However, more than half the organizations surveyed had only minimal emergency response procedures. Our cultural heritage is vulnerable to potential future disasters."

In fact, 68 percent of respondents said their staffs could benefit from emergency management training, while 67 percent intended to create new emergency plans or revise existing ones. Although the events of September 11 were terrorist acts, rather than the “usual” emergencies, the study found that standard emergency plans and responses worked well and were actually the most effective in dealing with the resulting damage.

Ruth Hargraves, a FEMA official in the Clinton administration, was the project director for the report. As she followed up with survey respondents, she was surprised by the disconnect among groups of staff at some of the institutions. In most instances, Hargraves says, employees in the public affairs departments completed the survey. When she

What we've learned

Based on the survey's findings and extensive follow-up interviews, the report offers some specific recommendations for emergency planning for cultural institutions. Key points include more staff training and complete, current inventories of collections. The report also calls for more effective communication between the emergency management and cultural heritage fields. It encourages professional associations, government agencies, and private foundations concerned about cultural heritage to make disaster management a priority and urges museums, libraries, and archives to begin a dialogue with local emergency officials before disaster strikes.

Vienna, Austria, where castle staff and the local fire department have worked out a highly detailed emergency plan.

“Not only do they have a plan in place, but they practice it,” Fraser says. “In these drills, fire departments respond with six people aboard each piece of equipment. Half the crew starts fire suppression work while the other half goes into the castle and helps castle staff start packing predetermined art objects. Everyone knows exactly where they're going and what they're expected to do. Plans such as this one are in place at museums and other cultural institutions all over Europe.”

In Scotland, for instance, fire departments have what he calls a “phenomenal” database tied into computers on fire apparatus. The data tell firefighters what needs to be done when responding to an emergency at any particular cultural institution.

“The database

tells you that one particular castle has its own fire pond nearby,” Fraser says. “At another, the data will tell you not to put a fire axe through a twelfth-century carved door at the front, but to go through a utility door at the side. It also tells firefighters, if they have to make choices, what they should save first.”

Long, of the Heritage Emergency National Task Force, believes the disaster of September 11 was a “wake-up call” to cultural institutions throughout the country.

“The lesson about how the Museum of Jewish Heritage saved its collection hasn't been lost,” Long says. “Collecting institutions all over the country are asking for copies of our report. And the need to develop an emergency plan that involves everyone, and then to practice it, is becoming a top priority among the biggest and smallest institutions.”

BILL FLYNN is a frequent contributor to NFPA Journal.

THE WORLD TRADE CENTER AND THE PENTAGON WERE HOME TO AN ESTIMATED \$100 MILLION WORTH OF ART, HISTORICAL ARCHIVES, AND ARTIFACTS.

called to clarify a response, however, she was often referred to the security or engineering staff.

“When I asked questions, such as ‘when did they start to close the air vents’ or ‘what kind of emergency procedures did they follow,’ I kept getting a response such as ‘you need to talk to ‘Joe,’ the security guy,’” Hargraves says.

When she finally tracked down “Joe,” she often found that he knew more about the institution's emergency preparedness plans than anyone else in the organization but that he was only a part-time volunteer.

The other issues that “shocked” Hargraves was the number of institutions that didn't keep a complete inventory of their collections at an off-site location. Of the responding institutions, 40 percent didn't have an up-to-date inventory, and more than 50 percent of the 60 percent that did have such a list didn't keep a copy of it off-site.

“That's an issue that we've really got to concentrate on,” she says.

The report's recommendations are designed to address any type of emergency, and, according to Hargraves, should be adaptable to any cultural institution in the country.

For Allan Fraser, a senior NFPA building code specialist, the report's recommendations, though encouraging, are also frustrating because the tools needed to accomplish many of the report's recommendations existed well before September 11, 2001. He points, in particular, to NFPA 909, *Protection of Cultural Resources*, and NFPA 914, *Fire Protection in Historic Structures*.

“The performance-based guidelines in each code allow all kinds of planning between the cultural institutions and the local fire department. And the planning can get quite extensive and detailed,” Fraser says.

According to Fraser, cultural institutions in Europe are decades ahead of those in the United States in developing workable plans to protect cultural resources. He cited the example of the enormous Schoenbrunn Castle in

by JOHN PARADISE

HOW FAR SHOULD building owners and designers go to make their buildings safer in the event of a terror attack. And what role do codes- and standards-writing organizations such as NFPA play in that process?

Recently, it was announced that a 750-foot (228-meter) glass-and-steel office tower—with better fireproofing and wider stairs for quick evacuation—will be built on the site of one of the smaller buildings to collapse at the World Trade Center complex. The plans, unveiled November 20, 2002, represent the first major rebuilding project at the World Trade Center to be announced.

At the corner of Madison Avenue and 42nd Street in New York City, work has been underway since August 2001 on the 35-story building that will serve as the

United States headquarters for CIBC World Markets, the Canadian bank. The design plans for the \$200 million structure were approved and the foundation work had already begun when the World Trade Center towers were attacked on September 11.

Almost immediately following the towers' collapse, the building's engineers redrew the skyscraper's plans, stiffening its structural design and adding extra safety features to protect its future occupants. It was an unusual move, but one others in the high-rise industry are also making in new construction and retrofit projects alike.

"The owners and developers are going to engineers and design architects," says Robert Solomon, assistant vice-president for building and life safety codes at NFPA, "and saying, 'I know the minimum standards for building and life safety are great, but I want to do more to make my building safer. I want more than just the minimum provisions of the code.' We've never seen this before with general commercial tall buildings."

Solomon, also a member of the Council on Tall Buildings and Urban Habitat, believes this trend is directly linked to the terrorist attacks of September 11.

"Until 2001, it was okay to build a structure with structural elements close to the street," he says. "Now, people look at columns and try to figure how

easily someone with a truck bomb could severely damage or possibly take down the building. Some of the owners of these buildings are picking up their telephones and calling their architects or project engineers looking for mitigation measures. This was unheard of before last year."

Post-9/11 changes

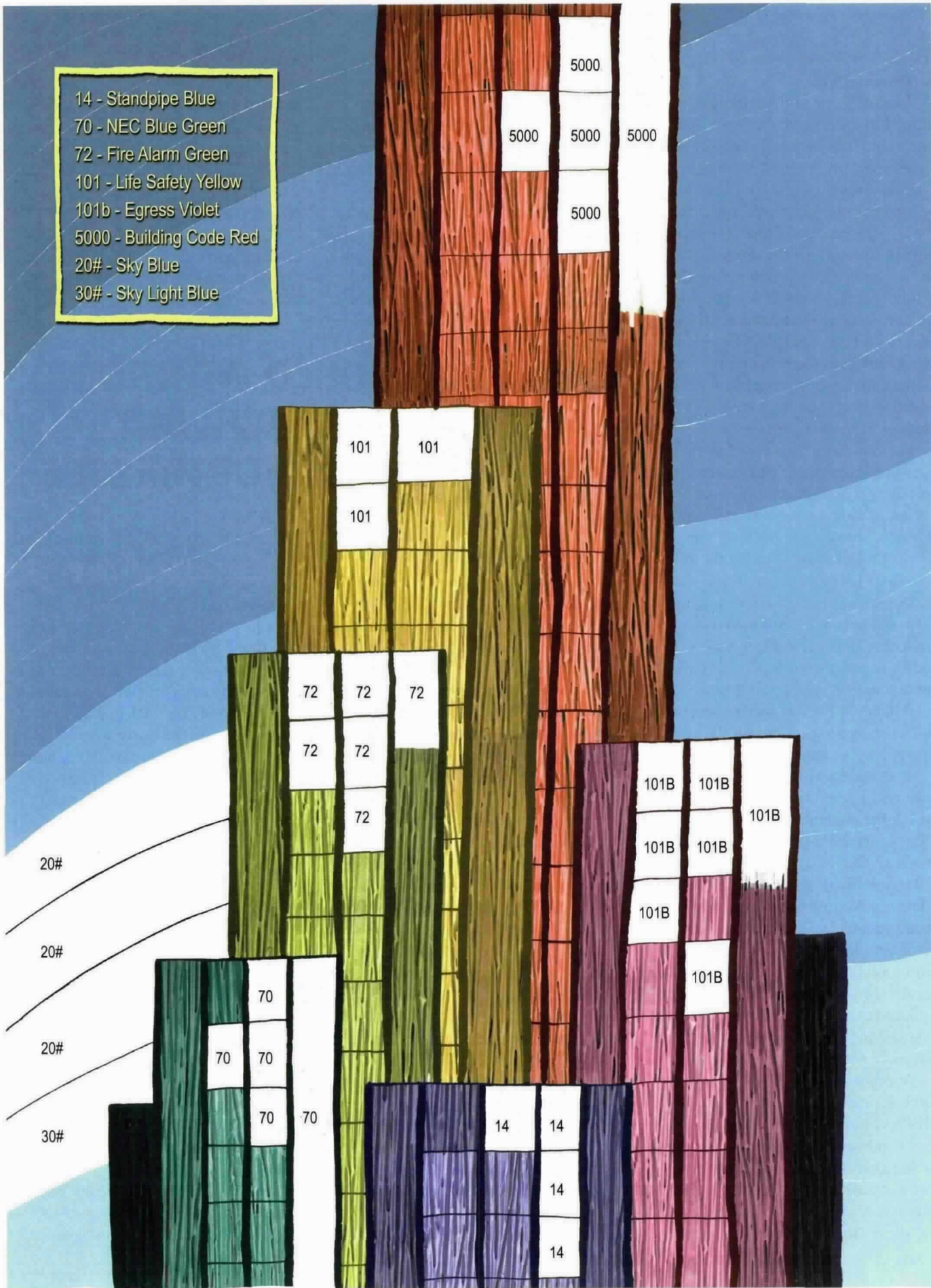
"We began meeting about a week or two after the attacks to brainstorm how to enhance this building," says John Bredehorst, a senior vice-president at Flack + Kurtz Inc., the New York City engineering firm that designed CIBC's portion of the building. "We'd used NFPA standards, such as NFPA 13, *Installation of Sprinkler Systems*, and NFPA 72[®], *National Fire Alarm Code*[®], and New York City's building codes for the base of the building, but we wanted more. We looked at everything, from fuel storage for generators to foam fire suppression systems."

"The first thing we did was ask ourselves if our building would truly be a target of a terrorist attack," says Al SanFilippo, vice-president of construction at Brookfield Financial Properties Inc., which has collaborated with CIBC to develop the Madison Avenue building. "The answer to that question was 'no,' but we did believe we were at high risk for collateral damage if terrorists ever attacked Grand Cen-

Build-by-Numbers

A traditional approach to high-rise safety is still the best approach

- 14 - Standpipe Blue
- 70 - NEC Blue Green
- 72 - Fire Alarm Green
- 101 - Life Safety Yellow
- 101b - Egress Violet
- 5000 - Building Code Red
- 20# - Sky Blue
- 30# - Sky Light Blue



tral Station. We're almost directly across the street."

Flack + Kurtz and Brookfield agreed to exceed the existing codes and standards by using specially laminated glass on the building's exterior walls to prevent the huge panes from splintering into deadly shards if the walls were ever damaged. They also agreed to reinforce the interior walls, floors, and ceilings surrounding the publicly accessible subway, parking garage, loading dock, and retail spaces and to add an extra-thick fire protective coating on the building's important structural components. In addition, they plan to stiffen walls and ceilings of the fuel storage area.

The two firms also opted to exceed fire protection codes and standards by installing a second standpipe and sprinkler riser to serve as an alternate water source for the building's sprinklers and installing exterior shutoff valves so firefighters can isolate damaged areas of the sprinkler system from outside. Self-contained battery packs for stairwell lighting will be provided, as will raised fresh air vents to protect against biological agents.

Although neither SanFilippo nor Bredehorst would quote a price for the upgrades, both agree the cost was sizable.

"Everyone involved in the decision-making believed the changes were worth the expense," Bredehorst says. "They wanted a safe building that made sense."

Bredehorst notes that many of the Madison Avenue building's safety enhancements will also be incorporated into the 52-story building his firm designed to house the headquarters of *The New York Times*.

But what exactly will these buildings be designed to protect their occupants from? Certainly not another airplane crash.

"Another attack like that is highly unlikely, and people realize that," says NFPA's Solomon. "What you're seeing in the industry today is people designing buildings to withstand other types of terrorist attacks, such as street-level explosions and chemical agents."

"We're capable of constructing a

building that could withstand an airplane crash, but it would be a fortress," Bredehorst says. "No one wants to build a fortress. First, such a building is too costly. Second, no one would want to work there. We wanted an affordable building with an environment that people wouldn't mind being in for 8 to 10 hours a day."

This is precisely the three-way balancing act, between cost, enhanced safety, and usability, with which many

BUILDINGS COULD WITHSTAND AN AIRPLANE CRASH, BUT THEY WOULD BE FORTRESSES

building owners and developers are currently struggling.

"The question is, how far should you go?" says Solomon. "That's a question no one can answer yet. We've been discussing this at NFPA since September 2001."

To date, the only change to NFPA codes even partially attributable to the terrorist attacks concerns the hourly ratings of some structural elements, Solomon says. This requirement is found in NFPA 5000™, *Building Construction and Safety Code*™.

"We've increased the baseline standard to protect structural members like beams, girders, and columns against fire to four hours (from two hours) in buildings over 420 feet (128 meters)," he says.

A reduction to three hours is possible for some occupancies, depending on the other fire protection features present.

Other code changes NFPA technical committee have discussed are wider stairwells for stairs serving a large number of occupants, redundant water supplies for sprinkler systems, and requirements dealing with the location of emergency generators.

"We're also discussing the bigger picture: should building and life safety codes even attempt to address the threat of terrorism?" Solomon says.

Stair width changes

Jake Pauls, an independent injury prevention and public safety consultant who's served on seven different NFPA committees over the years, including the NFPA 5000 Technical Correlating Committee, feels that some code changes are long overdue.

Pauls is also a member of Sky-scraper Safety Campaign, a non-profit group created by the families of those killed on September 11. The group is

a vocal advocate for improvements in, and better enforcement of, building codes in New York City and across the country.

Pauls is critical of what he calls the unhurried pace at which some industry professionals are embracing code changes since September 11, noting that the events of 2001 highlighted many areas where existing building standards could be improved. Among them is the need for wider stairways to allow people to escape from high-rises more rapidly.

Currently, the minimum width required between handrails in high-rise buildings is 37 inches (94 centimeters), the width of the stairwells in the World Trade Center towers.

"It's clear from accounts I've heard and photographs I've seen of the stairway descent that morning that this width was inadequate," Pauls says. "When the people met firefighters rushing up the stairs, they were forced into single file and had to turn sideways to get by."

The width also caused problems when it came to people in wheelchairs, he says.

"People were having difficulty carrying the wheelchairs down," says Pauls. "We've known about this problem for



The proposed United States headquarters for CIBC

many years. The World Trade Center clearly reinforces the need for a change.”

Pauls says that widening the stairways to 48 inches (121 centimeters) between handrails would allow two people to walk side by side easily.

“It also makes room for a counter-flow of traffic up the stairs and provides ample room to carry a wheelchair,” he says.

The committees drafting NFPA 5000 originally incorporated the wider stairway width during the development of the code, he says.

“But the change was removed last summer after a successful appeal before the NFPA Standards Council,” he says.

In mid-October, Pauls filed a petition with NFPA’s Board of Directors asking it to reverse the Standards Council’s decision.

“There comes a time when you just have to change,” he says. “That time has come.”

Is it really safer?

As is evident from the Madison Avenue project, some builders aren’t waiting for changes in construction

standards. Instead, they’re striking out on their own.

A number of industry experts feel these developers and building owners are making hasty, emotionally charged decisions.

“They’re trying to buy a piece of mind, but at what cost?” asks Ron Klemencic, chairman of the Council on Tall Buildings and Urban Habitat and president of Skilling Ward Magnusson Barkshire, a structural and civil engineering consulting company based in Seattle, Washington. “They’re making qualitative improvements—they’re encasing steel beams in concrete and wrapping concrete supports in steel—but are they making their buildings quantitatively safer? This remains to be seen.”

Klemencic argues that money is being spent randomly on expensive enhancements, with little or no oversight or direction from standards-setting institutions.

“These developers are making changes based on a crystal ball. But are we better off because of it? I don’t think so. And the worst part is that the public is under the impression that things are getting safer,” he says.

Klemencic says the public must be brought up to speed on what’s happening in the industry so they can help decide how to spend the money to keep them safe. He estimates that \$500 billion is spent annually in the United States on commercial building projects. Even if just two percent of that were spent on building enhancements, it would still equal \$10 billion, he says.

“But safer against who, what, where, and when?” he asks. “No one can answer that. So we spend \$10 billion to make high-rises safer, and the next target turns out to be a stadium or a bridge. Then what?”

“Instead of spending money on more steel and more bolts, perhaps some of that \$10 billion should be spent on improving airport security or on the FBI and CIA’s efforts to apprehend ter-

rorists,” he suggests. “In any case, the public should be part of the decision, and any changes to building and life safety codes should be made thoughtfully. I don’t think sweeping code changes are the answer right now.”

Back in New York, Bredehorst says he did more than consult a crystal ball to come up with the enhancements for the Madison Avenue and *The New York Times* buildings.

“We used NFPA standards and the city code for the basic construction, but then we met with the city’s fire department to get a feel for what enhancements they thought were important—to get a sense from the firefighters about where they thought the code was heading,” he says. “I think we’re ahead of the game.”

More studies planned

In September, the National Institute of Standards and Technology (NIST) kicked off a two-year analysis of the events that led to the World Trade Center towers’ collapse. NIST’s study picks up where the original Federal Emergency Management Agency study left off.

“Among the things they’ll look at are potential enhancements to codes,” Solomon says. “They’ll be recommending reasonable code changes based on two years of in-depth research. I think it makes sense to wait and see what they find, what they recommend. I don’t think it makes sense to jump the gun. NIST’s final report will undoubtedly provide a very big piece to the puzzle.

“This is a highly complex loss, and we need to learn from it. In terms of a building loss study, we need to remember that many things worked properly that morning and how effective the first responders were at making people feel safe during the evacuation. I’m sure that some changes will come, but let’s make sure they’re changes that’ll enhance building safety and performance,” Solomon says. ♣

JOHN PARADISE is a freelance writer based in Sandwich, Massachusetts.

by MICHAEL J. KARTER, JR.
AND JOSEPH L. MOLIS

2001 *Firefighter* **Injuries**

The majority of injuries occurred when firefighters were fighting fires, while more than 17 percent occurred at non-fire emergencies

BASED ON DATA reported by fire departments, NFPA estimates that 82,250 U.S. firefighters were injured on the fireground in the line of duty in 2001, excluding those injured due to the attacks on the World Trade Center and Pentagon on September 11. This is a decrease of 2.7 percent from 2000, and the lowest it's been since 1977 when we began using our current survey methodology.

The majority of injuries—41,395 or 50.3 percent—occurred while firefighters were fighting fires. An estimated 15,160 injuries, or 18.4 percent, occurred during other on-duty activities, and 14,140, or 17.2 percent, occurred at non-fire emergencies. Approximately 14,800 of these injuries

resulted in lost time.

The four major types of injuries incurred on the fireground were strains and sprains, which accounted for 39.6 percent of the injuries; wounds, cuts, bleeding, and bruises, which accounted for 22.2 percent; burns, which accounted for 7.9 per-

cent; and smoke or gas inhalation, which accounted for 6.2 percent. These figures were consistent with those from all non-fireground activities, as well, with strains, sprains, and muscular pain accounting for 54.6 percent of non-fireground injuries, and wounds, cuts, bleeding, and bruises accounting for 18.5 percent.

Fire department emergency vehicles were involved in an estimated 14,900 collisions while responding to, or returning from, incidents in 2001. Since fire departments responded to more than 20.9 million incidents in



An injured firefighter was taken to an ambulance at the scene of a high-rise fire in lower Manhattan, in New York.

2001, the number of collisions represents about one tenth of 1 percent of total responses. However, they resulted in 960 firefighter injuries, or 1.2 percent of all firefighter injuries for the year.

Firefighters' own vehicles were also involved in 1,325 collisions, resulting in an estimated 140 injuries.

NFPA estimates that there were 12,500 exposures to infectious diseases in 2001. This amounts to 1 exposure per 1,000 emergency medical runs by fire departments for the year. We also estimate that there were 19,600 exposures to hazardous conditions in 2001, or 19.9 exposures per 1,000 hazardous-condition runs.

Department by population protected

The average number of fires and fireground injuries per department by population of community protected in 2001 reveal that the number of fires a fire department responds to is related

to the population it protects. The numbers also reveal that fireground injuries are directly related to the number of fires the department attends.

This is clearly demonstrated by the range of the statistics, which go from a high of 107.7 fires for departments that protect communities of 500,000 to 999,999 to a low of 0.2 for those that protect communities under 2,500. The overall injury rate for departments that protect communities with populations of 50,000 or more was 2.5 injuries per 100 fires, or 30 percent higher than the injury rate for departments protecting communities with populations under 50,000.

Larger departments generally had the highest injury rates per 100 firefighters, with departments that protect communities with populations between 250,000 and 499,999 having the highest at 11.3.

As the size of the community decreases, the firefighter injury rate

drops steadily, to a low of 1.1 for departments protecting fewer than 2,500 people. There's a 10-to-1 difference in risk of injury between communities of 500,000 to 999,999 and those smallest with populations under 2,500.

One explanation for this difference is that larger departments attend more fires than small departments. Although a department protecting a community with a population of 500,000 to 999,999 has, on average, more than 50 times as many firefighters as one protecting a population under 2,500, the larger department attends more than 240 times as many fires. Therefore, they incur considerably more fireground injuries.

Geography makes a difference, as well. The Northeast reported substantially more fireground injuries for communities of most sizes where all departments reported sufficient data by region.

Improving firefighter safety

As these statistics attest, firefighting presents great risks of personal injury, and it's unlikely that all firefighter injuries can be eliminated simply because of the kind of work they perform and the hazards of the environment in which they work. However, a risk management system and the application of existing technology can reduce injury levels and bring about corresponding reductions in lost time and medical costs.

Examples of actions taken at the local level that can reduce injury rates include a commitment by top fire service management to reducing injuries and the establishment of a safety committee, headed by a safety officer, to recommend a safety policy and the means of implementing it. The policy should include a thorough investigation of all injuries that result in time away from the job. Firefighters should be provided with appropriate protective equipment and a mandate to use it, and an SCBA use and maintenance program should be developed and enforced. Safety policies should be established for apparatus drivers and passengers, and regular medical exams and physical fitness programs should be implemented. Management should also develop procedures that ensure that enough personnel respond to an incident for both firefighting and overhaul duties. An incident management system should be adopted and implemented, and all members performing emergency operations should be offered the proper training and education.

Communities can also take actions that will reduce firefighter injury rates. For example, they can implement programs to install private fire protection systems in structures that discover fires at an earlier stage, thus exposing firefighters to a less hostile environment. They can also beef up their fire safety education programs to make citizens aware of measures they can take to prevent fires and react correctly to a fire should one occur.

By addressing these priorities, fire-service organizations and individual



While York Township firefighters fought a fire in York, Pennsylvania from the front, York Area Regional Police officers picked up hoses and battled the blaze on the side. Officials say the two-alarm fire, which caused up to \$200,000 worth of damage, was caused by a candle in a child's second-floor bedroom. The only injuries were to two firefighters, one for wrist burns and the other for heat exhaustion. Neither required hospitalization.

communities can make significant strides toward reducing the number and impact of firefighter injuries in the United States. A good place to start is NFPA 1500, *Fire Department Occupational Safety, and Health Program*, which provides a framework for a firefighter safety and health program.

Endnotes

1. Michael J. Karter, Jr., "2001 Fire Loss in the United States," *NFPA Journal*, Vol. 96, No. 5

(November/December 2002), p. 70

2. For any estimate based on a sample survey, there's a confidence interval that measures the statistical certainty or uncertainty of the estimate. Based on data reported by fire departments responding to the NFPA Survey for U.S. Fire Experience (2001), we are very confident that the actual number of firefighter injuries falls within the range of 74,250 to 90,250.

3. The four geographic regions of

the United States are defined by the U.S. Bureau of the Census as the Northeast, which include Connecticut, Maine, Massachusetts, and New Hampshire; the North Central region, consisting of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin; the South, which includes the District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia; and the West, which include Alaska, Arizona, California, Colorado, Idaho, and Hawaii. ♣

MICHAEL J. KARTER, JR. is a senior statistician with NFPA's Fire Analysis and Research Division.

JOSEPH L. MOLIS is a member of NFPA's Fire Analysis Division and a full-time firefighter in Providence, Rhode Island.

FIREGROUND INJURIES**CARDIAC****Florida**

On September 26, the fire department received a call from a private alarm company reporting a fire at a screen-printing company. The unsprinklered building was of unprotected ordinary construction and had a smoke detector in the room of origin.

When firefighters arrived, they found a cotton T-shirt smoldering in a screen-printing machine, which had been left on overnight. The heat the machine generated had ignited the T-shirt, causing light smoke to pervade the building.

While opening windows to remove the smoke, a 54-year-old firefighter went into cardiac arrest and collapsed. A rapid intervention crew was immediately sent to the firefighter's location and removed him from the building. An advanced life support crew began cardiopulmonary resuscitation and defibrillated the injured firefighter, who was conscious and alert by the time he was taken to the emergency room. Department records indicate he was in cardiac arrest for three minutes.

After a five-day stay in the hospital, the 28-year veteran retired. The department provides periodic, mandatory medical evaluations but doesn't have a fitness program.

STRUCK BY OBJECT**Florida**

On July 19, a chief officer with 25 years' experience assumed command at a structure fire and began directing operations. The department's safety officer, who also responded to the fire, parked his sports utility vehicle 35 yards (32 meters) behind the command post and left it idling.

Approximately 40 minutes later, the vehicle slowly rolled across a field and crashed into the command post, pinning the chief officer's legs between the two vehicles. The commander, who wasn't wearing any protective equipment, sustained soft-tissue injuries to his legs, complicated by compartmental syndrome. When X-rays failed to reveal

any fractures, however, he was released from the hospital.

The following week, he returned to the hospital with complications, and remained there for a week. When he was released, he remained on injured status for 72 shifts, then returned to light duty, on which he remains.

The exact cause of the accident hasn't been determined.

New Mexico

On June 11, firefighters responded to a fire in a one-story, wood-frame barn that began when a spark from welding ignited hay.

As crews began placing handlines, the driver of the department's 1989 tanker/pumper parked it on level ground, applied the parking brake, and put it in gear, but he didn't use wheel chocks. He then delegated the pumping operation to a 32-year-old colleague. While she was operating the pump, the apparatus slipped out of gear and began rolling forward.

The pump operator jumped down from the pump operator's position on the top of the truck and ran alongside the moving apparatus, trying to reach into the cab to shut off the ignition. As she did so, the rolling truck crushed her against a steel fence pole, then continued rolling until another firefighter was able to shut it off.

The injured firefighter suffered a fractured pelvis and back injuries. She remained hospitalized for four months and cannot return to the fire service.

CONTACT**Louisiana**

On July 31, a fire started by vagrants who ignited trash in the bedroom of a vacant single-family house to keep mosquitoes away quickly spread throughout the dwelling until it involved the entire single-story structure.

As firefighters fought the blaze, the electrical service drop fell from the rear of the house into the yard, and a fire department safety officer was assigned to warn others of the danger. Unfortunately, a firefighter whose vision was obscured by condensation

on the facepiece of his SCBA didn't hear the safety officer's warnings and stepped on the charged electrical wire. The safety officer pushed the 6-year veteran off the wire, minimizing his contact with the current. He was taken to the emergency room, where he was treated and released. He returned to work immediately.

CAUGHT OR TRAPPED**New York**

On September 18, firefighters responded to a fire in a commercial occupancy of heavy timber construction. When firefighters arrived, the structure was fully involved in fire. Thirty-mile-per-hour winds spread the fire to another building.

Together, a company officer and a firefighter searched for victims and fire extension in the exposed building adjacent to the structure of origin. As they were searching the second story in the exposure, they became disoriented and were unable to locate the stairs. Low air alarms on their self-contained breathing apparatus activated. The company officer immediately radioed for assistance. Due to radio traffic, incident command did not hear his transmission. Another company relayed the emergency message to command. Minutes later both emptied the cylinders on their self-contained breathing apparatus. Recognizing their dilemma, the firefighters activated their PASS devices. A dedicated rapid intervention crew found and removed them to a waiting ambulance that transported them to the hospital.

The firefighters suffered from carbon monoxide poisoning and oxygen deprivation. They remained hospitalized overnight and treated in a hyperbaric chamber. Both were out of work for eight days then returned to full duty.

Renovations made to the exposed building were the primary reason the firefighters became disoriented. Renovations created a mazelike interior, with false windows and limited egress. Pending litigation has delayed determining the fire's cause.

Helping You Stay Informed of Critical Issues in Your Industry

In the next several pages, you'll find the latest news and information affecting your industry. Expanded versions of these articles can be found on the section web sites, where you'll also discover how joining a section can enhance your career.

Architects, Engineers, and Building Officials

WEB SITE: <http://www.nfpa.org/aebo>

SECTION CHAIR: John Kampmeyer, Triad Protection Engineering Corp., Springfield, Pennsylvania

HOT ISSUES

Historic Structures Seminar

by John E. Kampmeyer, P.E.

The 2½-day *Fire Protection for Historic Structure Seminar*, sponsored by the Architects, Engineers, and Building Officials (AEBO) Section, NFPA's Cultural Resources Technical Committee, and the National Park Service, and hosted by the Engineers Club of Philadelphia, was held in Philadelphia from September 25 to 27. Eighty-five people attended the seminar, at which 16 speakers discussed NFPA 914, *Fire Protection in Historic Structures*, and compared prescriptive and performance-based codes. They also discussed design and fire protection tools for use in historic structures.

At the beginning of the conference, "Ben Franklin" addressed the attendees, reviewing his involvement in the development of fire departments and fire insurance. Later, the Park Service provided a tour of Independence Hall.

This seminar illustrates how AEBO members can use local organizations to host NFPA programs in their areas.

See "Ins&Outs" on page 32 for more on this story. ♣

HOW TO REACH US: Allan Fraser, Executive Secretary, +1-617-984-7411, afrazer@nfpa.org

Aviation

WEB SITE: <http://www.nfpa.org/aviation>

SECTION CHAIR: Dennis Kennedy, P.E., Ansul, Inc., Marinette, Wisconsin

HOT ISSUES

The Behemoth Takes Flight in 2004

by Mark Conroy

As the largest airliner ever built, the new Airbus A380 will affect the way many airports address their ARFF resources. Although FAR Part 139 allows airports to determine ARFF levels by average daily departures, most larger airports base their resources on the largest aircraft scheduled into their airport, as required by NFPA 403, *ARFF Services at Airports*.

The A380 is 239 feet, 6 inches (72.9 meters) long and 79 feet, 1 inch (24.1 meters) wide, with a wingspan of 261 feet, 10 inches (79.8 meters). Its fuselage is 23 feet, 5 inches (7.1 meters) wide and 27 feet, 7 inches (8.4

NFPA ARFF Committee members aboard the full-scale mock-up of the Airbus A380 in Toulouse, France.



meters) high. Fully loaded, it can carry 81,890 U.S. gallons (309,981 liters) of fuel and 555 passengers in a three-class configuration, though if it were configured for one class, it could hold as many as 840 passengers. The A380 has 4 engines and 22 wheels.

Although it's sometimes called a double-decker jet, the A380, the first of which will take flight in late 2004, actually has three decks running the length of the aircraft. For the passenger version, the upper and main decks will accommodate passengers, and the belly will carry cargo.

On October 28, 2002, several members of the NFPA ARFF Technical Committee traveled to Toulouse, France, to get some important details first-hand from Airbus officials. They presented their findings to the committee at a meeting held October 29 to 31 in San Antonio, Texas.

At that same meeting, the committee finalized the revisions of NFPA 403, the big issue for which was minimum staffing, and NFPA 412, *Evaluating ARFF Foam Equipment*. The two standards will be presented for adoption at the NFPA World Fire Safety Conference and Exposition™ in May. ♣

HOW TO REACH US: Mark Conroy, Executive Secretary, +1-617-984-7410, mconroy@nfpa.org

Building Fire Safety Systems

WEB SITE: <http://www.nfpa.org/bfss>

SECTION CHAIR: Neal Krantz, Siemens Fire Safety, Livonia, Michigan

HOT ISSUES

Residential Sprinklers and Community Fire Protection Strategies

by Steve Thorne

When people think of fire protection, they generally think of the fire department, firefighters, and fire trucks. From a technical perspective, however, fire protection begins with the assumption that fire prevention will never be completely successful and that fires will

66 ARCHITECTS, ENGINEERS, AND BUILDING OFFICIALS
66 AVIATION
66 BUILDING FIRE SAFETY SYSTEMS
67 EDUCATION
68 ELECTRICAL

69 FIRE SCIENCE AND TECHNOLOGY EDUCATORS
69 FIRE SERVICE
70 HEALTH CARE
71 INDUSTRIAL FIRE PROTECTION
73 INTERNATIONAL FIRE MARSHALS ASSOCIATION

73 LATIN AMERICAN
73 LODGING INDUSTRY
74 METROPOLITAN FIRE CHIEFS
74 RAIL TRANSPORTATION SYSTEMS
74 RESEARCH
74 WILDLAND FIRE MANAGEMENT

occur. At the community level, this requires designing strategies to minimize loss of life and property.

Nationally, efforts to reduce the fire problem over the last two decades have been an unqualified success. However, there's one area in which there's a large opportunity for improvement: our homes.

The home fire problem

Home fires dominate the structure fire problem in the United States. In 2000, 73 percent, or 368,000, of structure fires, occurred in homes, killing 85 percent of the 4,045 civilians that died that year. According to NFPA statistics, the trend has been similar every year for the past two decades.

Given these statistics, residential sprinklers make sense. However, communities have been slow to incorporate them into their fire protection strategies. I believe this will change when communities adopt a strategy that integrates education, legislation, realistic implementation plans, and a long-term view of system stewardship.

One community with a successful sprinkler strategy is Scottsdale, Arizona, which requires sprinkler protection in all new construction, including single-family homes. Scottsdale's sprinkler ordinance was implemented on January 1, 1986, and 10 years later, 35 percent of the city's single-family homes and 49 percent of its multi-family homes were sprinklered.

Between 1986 and 1995, residential sprinklers activated in 44 of Scottsdale's 598 home fires, and 41 of these were controlled or contained by one or two sprinklers. No one died in these 44 fires, although 10 people died in 8 fires in unsprinklered single-family homes during the same period.

Education

For a community to begin a successful sprinkler program, its fire protection leaders must believe in it. To believe in it, they need to know how sprinklers work, what they cost, why they activate, what to do when they operate, and how to maintain them.

Once the leadership is educated, the media must educate the public. When they report on fires, they should mention whether sprinklers were present. If they were, the media

need to reinforce how little fire damage was done and the lives potentially saved.

The media can also ask fire experts pointed questions. Was the structure sprinklered? If not, why not? Would sprinklers have made a difference? This type of dialogue is critical to changing the way the public regards residential sprinklers.

Legislation and implementation

To further increase the effectiveness of a fire protection strategy, sprinkler installation must be mandatory, meaning that the requirements are standardized and codified. This requires the support of legislators.

To get this support, the standards and codes, as well as their implementation and enforcement provisions, must be rational and demonstrate a tangible benefit to the public. Issues such as installation costs and the impact on the water supply, housing costs, and insurance should be presented in the context of a business case for the long-term good for the community.

A recent estimate by the Home Fire Sprinkler Coalition equates the cost of sprinkler installation to roughly 1 percent of the total building cost.

In Scottsdale, the average residential sprinkler system cost approximately \$1.14 per square foot (929 square centimeters) for a 2,000-square-foot (186-square-meter) home. In addition, homeowners reportedly received, on average, a 10 percent discount on insurance.

Stewardship

Sustaining a sprinkler system's reliability and operability requires long-term stewardship to ensure that system design is appropriate, the sprinklers are properly maintained, and the public is aware of their performance and maintenance.

Because sprinkler systems that don't work can cause the public to lose confidence in sprinklers, the fire protection community must commit to ensuring that all systems installed are reliable. This may include equipment warranties, qualification provisions for installers, and educational provisions for owners about such things as freeze protection and recalls.

Now is the time for communities to incorporate a sprinkler strategy into their fire

protection programs. The technology's proven. The costs of installing sprinklers in new construction are reasonable. And the codes and standards governing their design and installation are in place. All we need now is the vision to see what we can accomplish in 20 to 30 years. ❖

Stephen Thorne is fire marshal for the Idaho National Engineering and Environmental Laboratory (INEEL). For the full article, visit www.nfpa.org/bfss.

HOW TO REACH US: Richard Bielen, Executive Secretary, +1-617-984-7279, rbielen@nfpa.org

Education

WEB SITE: <http://www.nfpa.org/education>

SECTION CHAIR: Peg Carson, Carson Associates, Inc., Warrenton, Virginia

HOT ISSUES

Heroes

by Peg Carson

Recently, I attended the Alexandria, Virginia, Fire Department's annual memorial service, where I learned something about the character that qualifies those in the fire service as heroes. It's a small story, told by a community partner, who was asked to join his local fire department in welcoming to the area members of the families of those being honored. At all three Washington, D.C., metropolitan airports, he said, off-duty, uniformed members of the fire service met arriving families at the gate and escorted them to a welcoming area staffed by off-duty firefighters. Their bags were delivered to them, and they were taken to their hotels. This procedure was repeated, in reverse, on their return home.

I don't think anyone beyond those directly involved would have known about this demonstration of respect had it not been for another member of the community. It's an example of the numerous acts of generosity performed without expectation of recognition that confirms for me how much we should admire members of the fire service and why we should regard them as heroes. ❖

Recognizing Outstanding Educators

NFPA and our partners sponsor two opportunities to recognize outstanding fire and life-safety educators who go beyond expectations to inspire us.

The first is the annual *Risk Watch*® Teacher of the Year Award, co-sponsored by NFPA and the family of Rhea Reiss, a long-time advocate of safety education. The award recognizes educators who have demonstrated excellence and innovation in the use of *Risk Watch*. Nominees for this award must be full- or part-time classroom teachers or day-care providers in a public, private, or parochial school system who have used *Risk Watch* in a consistent, creative manner and can document an improvement in the

safety knowledge and behavior of their students and their students' families.

Nominations, which must be accompanied by an original *Risk Watch* lesson plan, are due in May. The winner and the one who nominated him or her will receive an expense-paid trip to NFPA's Fall Education conference in November. The teacher will also receive a selection of NFPA educational materials and a statue of Sparky® the Fire Dog.

This year's winner is Michele Clayton, a first-grade teacher at the Leland Street Elementary School in San Pedro, California.

For more information, call NFPA's Public Education Division at (617) 984-7285.

The second award is the newly created Safety Education Hero Award, established by Lowe's Home Safety Council, the Congres-

sional Fire Services Institute (CFSI), and NFPA to honor fire and life-safety educators who exemplify the values and spirit of a fire service hero. Fire service and life-safety educators whose work conducting an NFPA educational program results in a life saved or a tragedy averted are eligible for this award.

The first Safety Education Hero Award recipient will be honored at the CFSI National Fire and Emergency Services banquet in Washington, D.C., on April 30 and will receive a \$1,000 honorarium, a medal, and up to \$2,000 in NFPA educational materials.

For more information, visit www.home-safetycouncil.org/educationhero. 🐾

HOW TO REACH US: Judy Comoletti, Executive Secretary, +1-617-984-7287, jcomoletti@nfpa.org

Electrical

WEB SITE: <http://www.nfpa.org/electrical>

SECTION CHAIR: Richard Loyd, R&N Associates, Perryville, Arkansas

HOT ISSUES

Electrical Codes, Standards, and Recommended Practices

Although the *National Electrical Code*® is the most prominent document for which the NFPA Electrical Engineering Department is responsible, 12 other codes, standards, and recommended practices fall within the department's purview. The following table provides pertinent information about their development cycles.

DOCUMENT NUMBER/NAME	CURRENT EDITION	NEXT REVISION CYCLE/ NFPA TECHNICAL REPORT SESSION	PROPOSAL CLOSING DATE	COMMENT CLOSING DATE	NFPA STAFF LIAISON
NFPA 70, <i>National Electrical Code</i>	2002	May 2004 (2005 edition)	11/1/02	10/31/02	Mark Earley
NFPA 70B, <i>Recommended Practice for Electrical Equipment Maintenance</i>	2002	November 2005	6/25/04	4/1/05	Kenneth Mastrullo
NFPA 70E, <i>Electrical Safety Requirements for Employee Workplaces</i>	2000	May 2003	12/28/01	10/4/02	Kenneth Mastrullo
NFPA 72, <i>National Fire Alarm Code</i> ®	2002	May 2006	TBD	TBD	Lee Richardson
NFPA 73, <i>Electrical Inspection Code for Existing Dwellings</i>	2000	May 2005	1/5/04	10/8/04	Jeffrey Sargent
NFPA 79, <i>Electrical Standard for Industrial Machinery</i>	2002	November 2005	6/25/04	4/1/05	Joseph Sheehan
NFPA 110, <i>Emergency and Standby Power Systems</i>	2002	November 2004	6/27/03	4/24/04	Donald Shields
NFPA 111, <i>Stored Electrical Energy Emergency and Standby Power</i>	2001	November 2004	6/27/03	4/24/04	Donald Shields
NFPA 496, <i>Purged and Pressurized Equipment for Electrical Enclosures</i>	1998	May 2003	12/28/01	10/4/02	Jeffrey Sargent
NFPA 497, <i>Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas</i>	1997	November 2003	6/28/02	3/26/03	Jeffrey Sargent
NFPA 499, <i>Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas</i>	1997	November 2003	6/28/02	3/26/03	Jeffrey Sargent
*NFPA 720, <i>Recommended Practice for the Installation of Household Carbon Monoxide (CO) Warning Equipment</i>	1998	November 2002	7/6/01	4/5/02	Lee Richardson
NFPA 780, <i>Installation of Lightning Protection Systems</i>	2000	May 2004	1/3/03	10/10/03	John Caloggero

*The next edition of NFPA 720 was acted on at the November 2002 Technical Committee Report Session and is scheduled to be issued at the January 2003 meeting of the NFPA Standards Council.

You can obtain proposal and comment forms from the NFPA Standards Administration Department or from the codes and standards page at www.nfpa.org. 🐾

HOW TO REACH US: Jeff Sargent, Executive Secretary, +1-617-984-7442, jsargent@nfpa.org

Fire Science and Technology Educators

WEB SITE: <http://www.nfpa.org/firescience>

SECTION CHAIR: Ronald Hopkins, Eastern Kentucky University, Richmond, Kentucky

HOT ISSUES

Fire Modeling Session Held

The Fire Science and Technology Educators Section sponsored an education session on computer fire modeling for fire investigations on Sunday, November 17, at NFPA's Fall Education Conference. The section's Executive Board also met that day. Results of the meeting are posted on www.nfpa.org/firescience. *

HOW TO REACH US: Frank Florence, Executive Secretary, +1-617-984-7480, fflorence@nfpa.org

Fire Service

WEB SITE: <http://www.nfpa.org/fireservice>

SECTION CHAIR: Terry Allen, Chief, Cambridge, Ontario, Canada

HOT ISSUES

Using the Accreditation Process to Evaluate Municipal Protection

by Deputy Chief Ward Flegler

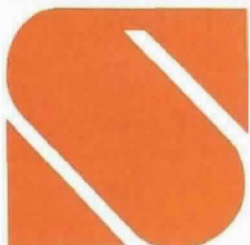
In August 2001, the City of Mesa, Arizona, Fire Department became internationally accredited by successfully meeting 255 performance measurements required by the Commission on Fire Accreditation International (CFAI) and passing the CFAI team's on-site peer review. The accreditation lasts for five years, during which the department must supply CFAI with an annual compliance report.

CFAI was founded in 1988 by the International City/County Management Association (ICMA) and the International Association of Fire Chiefs (IAFC) to accredit fire departments that conduct a successful self-assessment using CFAI documents and pass the CFAI peer review. The process is similar to that used to accredit U.S. colleges.

The Mesa Fire Department delivers emergency response and fire prevention services, as well as fire and life safety education, to the United States' 43rd largest city and the third largest city in Arizona. In 2001, the department responded to more than 49,000 emergency calls, more than 75 percent of which were for emergency medical services.

Accreditation overview

The success of any organization depends on planning. All organizations need a



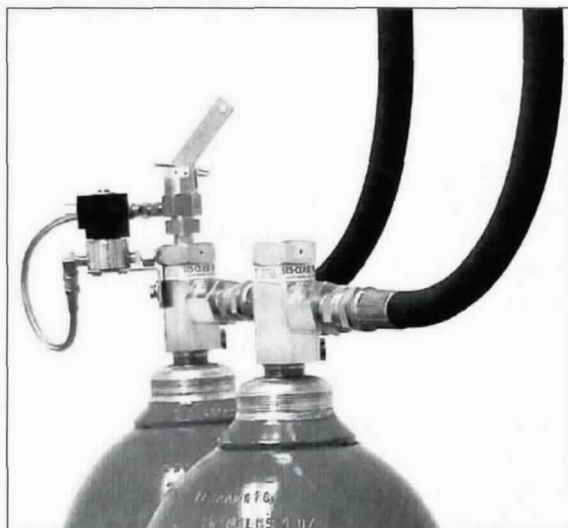
S.E.S. USA INC

Our Strength is the System Design S.E.S. Unibody Valve System

Latest Innovation in Cylinder Valves since 1925

S.E.S. Products: "Save Lives, Save Money"

The Unibody SW-50 makes a CO₂ Extinguishing System more Efficient and Cost Effective!



UNIBODY DESIGN

No Leakage; No separate valve and discharge heads
Controls local as well as total flooding applications
Removable Valve Seat for easy economical repairs

TYPICAL APPLICATIONS

Gas Turbine, Diesel, and Hydro-Electric Generators
Power and Electrical, Paint Spray Booths, Dip Tanks
Vaults, Records Storage, Newspapers, and Food Processing

CARBON DIOXIDE SYSTEMS

Reliable and Efficient Fire Fighting Agent
Extinguishes Fire by diluting the Oxygen
The SW-50 is UL approved in Canada, patented in USA, Canada, UK. Other Countries pending.

Interested in OEM? Visit our website: www.sesusa.us

S.E.S. 6527 192 nd PL., Kenmore, WA. USA 98028-3457

PH: (425) 485-3801 FAX: (425) 486-1626 E-mail: alan@sesusa.us

MARK YOUR CALENDARS: Visit us at AMERICA'S FIRE EXPO, July 22-24, 2003 in MIAMI, BOOTH 207, corner booth thru main entrance.

Circle 014 on Reader Service Card

workable master plan to project funding for new facilities, apparatus, programs, and staffing, and to generate support from officials and citizens.

The Mesa Fire Department chose a 10-year strategic plan covering the period from 2000 to 2010 that documents the department's goals and provides deadlines for achieving them.

Operational level

Using CFAI standards allows us to focus on coverage, staffing, critical tasks, risk assessment, and response levels. To maintain adequate staffing levels for suppression and emergency medical services, for example, the *Standards of Response Coverage Manual* provides requirements representing high standards of patient care, fire suppression, and safety during operations. The manual also recommends how many units should respond to a given type of incident.

By collecting call volume and response time data monthly, we can assess our coverage needs. We know, for instance, that we meet our response-time requirement of 4 minutes or less in 69 percent of our runs, actually surpassing our goal of 4 minutes or less 60 percent of the time. We also know that our advanced life support system is successful: our average Code 3 response travel time is 3 minutes, 39 seconds.

The annual risk assessment enables us to gather information relevant to safety, as well. Each year, we reassess the ratings of high-, special-, moderate-, and low-risk occupancies and update their pre-fire plan drawings.

We also created customer service zones to coordinate critical projects, such as Fire Prevention Week and hydrant maintenance programs, thus making them more effective.

Finally, we couldn't provide our prevention and emergency services or public education programs without support staff. Joint labor-management teams that address planning and problem-solving issues are key to the success of our accreditation efforts.

At the Mesa Fire Department, we believe accreditation allows us to evaluate the community's protection needs more accurately and evaluate our performance honestly. We encourage all municipal fire and life-safety protection agencies to go through the CFAI self-assessment model, as we will again when our accreditation expires in 2006. Accreditation not only helps us serve our customers reliably, but it also holds ensures that we spend our tax dollars wisely.

To learn more about CFAI accreditation, write to the Commission on Fire Accreditation International, 4500 Southgate Place, Suite 100, Chantilly, VA 20151; call (703) 691-4620; fax (703) 691-4622; or visit www.cfainet.org.

Deputy Chief Fleger is responsible for operational and strategic planning, and research and development at the Mesa, Arizona, Fire Department. You can reach him at Ward_Fleger@ci.mesa.az.us. For the full article, visit www.nfpa.org/fireservice.

HOW TO REACH US: Stephen N. Foley, Executive Secretary, +1-617-984-7468, sfoley@nfpa.org

Health Care

WEB SITE: <http://www.nfpa.org/healthcare>

SECTION CHAIR: Thomas Haynes, Woodpecker Hill Nursing Home, Greene, Rhode Island

HOT ISSUES

Section Representatives Meet with Jim Shannon

On September 4, representatives of the Health Care Section (HCS) Executive Board met with NFPA President Jim Shannon to discuss our goals. Among the topics discussed were HCS support of NFPA 5000™, *Building Construction and Safety Code*™, and NFPA 101®, *Life Safety Code*®, as well as discounts for large purchases of both NFPA 101 and NFPA 99, *Health Care Facilities*. The American Society for Healthcare Engineering (ASHE) and the American Health Care Association, which use these

and other codes, could offer their members strategically bundled documents at a reduced price. A joint ASHE/NFPA membership was discussed, but NFPA's bylaws prohibit such an arrangement.

Board members also discussed certifying surveyors. A certification or certificate program focusing on NFPA 101, NFPA 99, and other related codes and standards may help surveyors, and training programs could be developed to support the certification. This will be investigated further.

Due to financial constraints, health-care members haven't been as well represented recently at the World Safety Conference and Exposition™ (WSCE) or Fall Educational Conference as they have in the past. The Board inquired about alternative voting methods, including remote voting, at both meetings. Although verification of voters would be difficult, NFPA's already started studying this possibility.

The Board has also broached the subject of compensating presenters at WSCE and Fall Meeting educational sessions in an effort to attract quality good speakers. Several options were discussed, but no decisions were made.

HCS technical review of health-care-related products has been discussed in the past, and the Board reiterated the section's desire to become more involved. NFPA indicated it would take advantage of this offer. The Board also noted that the section would like to be represented on the NFPA Board of Directors and the Standards Council, as well as NEC Panel 15. Several health-care members currently serve on Panel 15, but there's no section representative. The section will pursue a nomination for this position.

The HCS also wishes to continue the Section Advisory Committee, as section members feel it's a worthwhile exercise.

Finally, there was some concern that *Code Red* has lost its audience since migrating to *NFPA Journal* and to an electronic format. NFPA is investigating e-mail blasts to alert members to new material on the site and in the magazine.

Shannon concluded the meeting by saying that the HCS, the membership of which has reached 3,316, is especially important to NFPA. He thanked everyone for attending and looks forward to working with the section. ❖

Are There Restrictions on Alcohol-Based Hand Sanitizers?

Neither NFPA 101 nor NFPA 99 specifically addresses the use of alcohol-based hand sanitizers. Until such language is added, it's the authority having jurisdiction's (AHJ's) call. When making the decision, the AHJ should consider the sanitizer's location, amount, use, and medical benefits. ❖

HOW TO REACH US: Richard Bielen, Executive Secretary, +1-617-984-7279, rbielen@nfpa.org

Industrial Fire Protection

WEB SITE: <http://www.nfpa.org/industrial>

SECTION CHAIR: Mike Newman, Johnson & Johnson Company, New Brunswick, New Jersey

HOT ISSUES

Chair's Corner

by Mike Newman

The Industrial Fire Protection Section (IFPS) Board resumed a full slate of activities with its September meeting at NFPA headquarters. This meeting, an important part of our planning for the coming year, allows us to put our ideas and concerns before the Association.

During the meeting, we noted that, although the IFPS is represented on more than 35 technical committees significant to industrial facilities, company mergers and retirements have

cut our representation on several key committees. The Board would like you to consider volunteering to fill these gaps or expand the section's presence to new areas, such as the Premises Security Project. If you'd like to represent IFPS, please contact IFPS Secretary Mike Snyder or Executive Secretary Guy Colonna.

Speaking of NFPA staff, IFPS membership has grown significantly over the past few years as a direct result of the efforts of Carol Ann Faber and Lauren Siniawer. They continue to work hard to increase section membership, and we appreciate their efforts.

Mike Snyder put together an interesting session at NFPA's Fall Education Conference in Atlanta, inviting Martin Workman of Viking to speak about the fundamentals of fire sprinkler system operations for emergency service personnel. Thanks to Mike and Martin for contributing to our program.



STAY UP ON THE CHANGES IN FIRE PROTECTION ENGINEERING FROM WHEREVER YOU ARE.

Worcester Polytechnic Institute's graduate distance learning program makes it easier for working professionals to stay current in this rapidly changing field. You'll learn the same material, from the same engineering professors that teach on campus. But on your schedule, wherever you are, with no campus-based requirements at all. Whether you just need one course or a degree, WPI can help you move your career ahead... without interrupting it. Call or click today for more information.

508-831-5220 www.wpi.edu/+ADLN/Fire



WPI

The University of
Science and Technology.
And Life.™

Circle 022 on Reader Service Card

The section's already completed plans for three sessions at the World Safety Conference and Exposition™ in Dallas. We'll give you more information about those plans in the next issue of *NFPA Journal*.

Best wishes for the New Year from all of us on the IFPS Board. We invite you to tell us what you expect from your section leadership. ♣

The Board's Newest Members

Last year, the IFPS Board was pleased to welcome as directors Mike DeVore of State Farm Insurance and Dale Romme of Hallmark Cards.

A former firefighter and paramedic, Mike has a degree in mathematics with a minor in fire science from Maryville University in St. Louis. At State Farm, he's responsible for conducting insurance surveys of State Farm facilities; commissioning new fire protection systems; and

ensuring the proper inspection, testing, and maintenance of existing systems.

Mike holds the Chartered Property Casualty Underwriter and Associate in Risk Management designations. He's also a Certified Fire Protection Specialist.

Dale is principal risk control administrator in the Corporate Risk Management Group of Hallmark Cards, Inc., heading Hallmark's property conservation and loss control program worldwide. He's responsible for conducting site evaluations, establishing corporate standards, facilitating the establishment of goals, providing an interface between loss control engineers and facility managers, and providing consulting services.

Dale received a bachelor's degree in chemical engineering and a master's degree in business administration from the University of Kansas. He's a Certified Hazardous Materials Manager and a Certified Environmental Auditor. ♣

Nominating Committee Prepares Board Member Slate

Nominating Committee Chair Steve Daily of Anheuser Busch has provided a preliminary slate of candidates for the 2003-04 IFPS officers and directors.

Chair: **Anthony M. Aguilera**, Honeywell
 Vice-Chair: **Michael Snyder**, Dow Corning
 Secretary: **Thomas Gray**, Zurich
 Past Chair: **Michael Newman**, Johnson & Johnson

Directors (three-year terms):

David Philip (expires 2003, appoint to 2006), Nestle Purina
Terry Marski (expires 2003, appoint to 2006), The Tribune Company
Diane May [open position (vacated by Tom Gray) expires 2003, appoint to 2006], Westvaco

ARE YOU ASKING



4 New Fire Service Tests Now Available!

Call: 800-381-TEST (8378)
Mail: 1617 Duke Street, Alexandria, VA 22314
Internet: www.ipma-hr.org

THE RIGHT QUESTIONS?

Make sure you are with IPMA written entry-level and promotional fire service examinations. Known as the leader in providing valid, legally defensible tests and products, IPMA has served the fire, police, correctional, dispatcher, and clerical arenas for more than 40 years.

<p>B-5 Entry-Level Firefighter Exam (100 questions)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Intended to assess a wider range of characteristics than typical entry-level firefighter exams. <input type="checkbox"/> Includes a 20 question non-cognitive component that will provide a more complete view of applicants and reduce adverse impact. <p>The B-5a Entry-Level Firefighter Exam - Contains the 80 questions from the B-5, excluding the non-cognitive component.</p>	<p>701 Fire Supervisor (Lieutenant) Exam (100 questions)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Incorporates the most current thinking, technology and regulatory requirements in the field of firefighting. <input type="checkbox"/> Includes Emergency Medical Care questions in response to the industry need. <p>The 702 Fire Supervisor (Lieutenant) Exam - a 100 question exam similar to the 701 but with the Emergency Medical Care questions replaced.</p>
--	---

International Personnel Management Association 

Circle 009 on Reader Service Card

NEED HELP FINDING THE CORRECT GAS OR CARBON MONOXIDE DETECTOR FOR YOUR APPLICATION?

The Online Source For Gas Detection is:

www.MACURCO.com

The Professional's Choice Since 1972

MACURCO GAS DETECTORS
 3946 S. Mariposa Street, Englewood CO 80110
 PH: 303-781-4062 FX: 303-761-6640

Circle 011 on Reader Service Card

The remainder of the Board:

Neal Krantz (2004), Siemens
Rick Schartel (2004), PPL
Ron Stein (2004), AON Risk Services
Mike Devore (2005), State Farm Insurance
Dale Romme (2005), Hallmark Cards
Craig Remsburg (2005), The Boeing Company

HOW TO REACH US: *Guy Colonna, Executive Secretary, NFPA, +1-617-984-7435, gcolonna@nfpa.org*

International Fire Marshals Association

WEB SITE: <http://www.nfpa.org/ifma>

SECTION CHAIR: Ron Farr, Kalamazoo Township Fire Department, Kalamazoo Township, Michigan

HOT ISSUES

Professional Development

Anyone interested in attending or sponsoring the IFMA Fire Protection Institute training programs "Principles of Fire Protection Engineering" or the "Management Institute for Fire Marshals" should contact Executive Secretary Steven F. Sawyer at (617) 984-7423 or ssawyer@nfpa.org. Please check the IFMA web site for complete details.

The four-day Management Institute for Fire Marshals will be held in Chelan, Washington, from March 24 to 27. The Principles of Fire Protection Engineering will be held in Las Vegas from March 24 to 27. And the two-day Management Institute for Fire Marshals is tentatively scheduled for April 29 and 30 in Auburn Hills, Michigan. ♣

100th Anniversary

In 2006, IFMA will celebrate its 100th anniversary. If you have any ideas for the celebration, please contact John Robison at firemarshal@insurance.state.al.us. ♣



Ron Farr presented John Robison with IFMA's Meritorious Service Award at NFPA's Fall Education Conference.

Meritorious Service Award

In keeping with the International Fire Marshal Association's (IFMA's) highest traditions, John S. Robison received the IFMA's Meritorious Service Award at NFPA's Fall Educational Conference in Atlanta for his service to fire protection, life safety, and fire-code development. As the IFMA Olympics project manager, John negotiated with the U.S. Olympic Committee to provide fire inspectors during the 2002 Winter Games and spent six weeks in Park City, Utah, as part of the fire marshals management team. Thanks to John's efforts, 25 IFMA members helped Park City officials perform fire inspections and provide fire and EMS services. ♣

HOW TO REACH US: *Steven Sawyer, Executive Secretary, +1-617-984-7423, ssawyer@nfpa.org*

Latin American

WEB SITE: <http://www.nfpa.org/latinamerican>

SECTION CHAIR: Eduardo Abé, Tecin Rosenbauer S. A., Buenos Aires, Argentina

HOT ISSUES

IRAM, NFPA Launch Spanish-Language Version of NFPA 101®

On November 19, 130 fire-safety professionals gathered at the Argentine Institute of Normalization (IRAM) to celebrate the publication of the newly translated NFPA 101®, *Life Safety Code*®. Speakers included José Francisco López, general director of IRAM;

Eduardo Abé, president of NFPA's Latin American Section; Vicente Herrán, commissioner/inspector and general director of the Fire Department of Buenos Aires; and Federico Cveteznik, an instructor for NFPA/IFST.

The following day, IRAM and NFPA held their first two-day seminar on NFPA 101, taught by Federico Cveteznik.

IRAM has translated more than 10 NFPA codes, including NFPA 13, *Installation of Sprinkler Systems*, and NFPA 72, *National Fire Alarm Code*®. For a complete list, visit http://www.nfpa.org/International/Espanol/CatalogoEspanol/catalogo_en_espanol.asp. ♣

HOW TO REACH US: *Oiga Caledonia, Executive Secretary, +1-617-984-7231, ocaledonia@nfpa.org*

Lodging Industry

WEB SITE: <http://www.nfpa.org/lodging>

SECTION CHAIR: Thomas Daly, Hilton Hotel Corporation, Beverly Hills, California

HOT ISSUES

California State Codes

The 2001 editions of the California state codes took effect on November 1, 2002. These codes, with some significant state amendments, are based on several model codes. The *California Building Code* is based on the 1997 *Uniform Building Code*; the *California Electrical Code* is based on the 1999 *National Electrical Code*®; the *California Fire Code* is based on the 2000 *Uniform Fire Code*; and the *California Mechanical Code* is based on the 2000 *Uniform Mechanical Code*.

Visit www.bsc.ca.gov for more details. ♣

Also of Interest

As of September 6, 2002, the U.S. Fire Administration reports that 31,443 lodging establishments listed on the National Master List meet the requirements of the *Hotel and Motel Firesafety Act of 1990*. ♣

HOW TO REACH US: *Greg Harrington, Executive Secretary, +1-617-984-7471, gharrington@nfpa.org*

Metropolitan Fire Chiefs

WEB SITE: <http://www.nfpa.org/metro>

SECTION CHAIR: Mario Trevino, Chief, San Francisco, California

HOT ISSUES

Memorandum of Understanding

The Metro Chiefs Section has signed a memorandum of understanding with the Federal Emergency Management Agency and the U.S. Fire Administration (USFA) providing a framework within which the organizations will cooperate to reduce the incidence of fire and other hazards and promote fire-safety education. The groups agreed to coordinate efforts to address interoperability issues, such as communications, equipment and apparatus standardization, unified incident command, and integrated incident command systems. They also agreed to work together to raise public awareness about fire and other hazards; promote community fire prevention and preparedness; and communicate information and successes.

The memorandum, effective until March 1, 2005, was signed by USFA Administrator R. David Paulison and Metro Chiefs Section Chair Mario Trevino. ♣

HOW TO REACH US: Russ Sanders, Executive Secretary, +1-502-894-0411, rsanders@nfap.org

Rail Transportation Systems

WEB SITE: <http://www.nfpa.org/rail>

SECTION CHAIR: James Gourley, Fire Protection Engineer, Glenside, Pennsylvania

HOT ISSUES

Rail Fire Safety Symposium Held

The Rail Transportation Systems (RTS) Section sponsored a symposium on rail fire safety and security at NFPA's Fall Education Conference in Atlanta, and the papers are available on the RTS web page.

The RTS Board of Directors also met to discuss other section activities. As a result, the section may hold another symposium at

this year's World Safety Conference and Exposition™ in Dallas, and a chat room/bulletin board may be added to our web page so members can discuss topics of interest. Links to other rail-related sites would be included.

If you have any ideas for future symposia or seminars, or you'd like to suggest a topic you believe should be addressed, contact James Lake, executive secretary for the Rail Section, at jlake@nfpa.org. ♣

HOW TO REACH US: Jim Lake, Executive Secretary, +1-617-984-7470, jlake@nfpa.org

Research

WEB SITE: <http://www.nfpa.org/research>

SECTION CHAIR: Samuel Dannaway, Dannaway and Associates, Pearl Harbor, Hawaii

HOT ISSUES

7th Research Application Symposium to Be Held

Fire protection engineers and fire prevention officers, mark your calendars for the National Fire Protection Research Foundation's 7th annual user-oriented *Fire Suppression & Detection Research Application Symposium*, to be held from January 22 to 24 at the Holiday Inn Select Orlando International Airport. The symposium's theme is bridging the gap between practitioners and researchers, and between detection and suppression innovations.

Dr. J. Thomas Chapin, general manager of the Fire Protection Division at Underwriters Laboratories Inc., will give the symposium's keynote address, "The Fire Continuum—From Materials to Tall Structures." Moderators Carl Baldassarra, Fred Leber, Ronald Mengel, Wayne Moore, and John O'Neill will lead sessions on new North American fire test laboratory resources; uses of new detection and suppression research data in China, Latin America, and Sweden; new fire tests and analyses in fire suppression, detection, and alarm; and case studies of suppression and detection challenges.

You can find the complete program of 33 presentations and general conference information at <http://www.nfpa.org>. ♣

HOW TO REACH US: John Hall, Executive Secretary, +1-617-984-7460, jhall@nfpa.org

Wildland Fire Management

WEB SITE: <http://www.nfpa.org/wildland>

SECTION CHAIR: Bill Terry, USDA Forest Service, Washington, D.C.

HOT ISSUES

Photos Wanted for Contest

The USDA Forest Service magazine *Fire Management Today* invites you to submit your best fire-related photos to its annual competition. Categories include wildland fire, aerial resources, prescribed fire, ground resources, wildland/urban interface fire, and miscellaneous.

First-place winners in each category will receive camera equipment worth \$300 and a 16- by 20-inch framed copy of their winning photos. Second-place winners will receive an 11- by 14-inch framed copy of their winning photos, and third-place winners will receive an 8- by 10-inch framed copy of their winning photos. The winning photos will appear in a future issue of *Fire Management Today*.

You may submit an unlimited number of original photos, with detailed captions, from any place or time, indicating only one competition category per photo. Photos without captions will be eliminated, as will those that are date-stamped, show unsafe firefighting practices (unless that's their express purpose), or are of poor quality. Duplicates, including most overlays and other composites, will also be eliminated. Digital photos aren't accepted, and photos cannot be returned. The photographers must own the rights to the photos they submit, and the photos may not have been published before.

All submissions must include a signed statement granting the USDA Forest Service the rights to use your photos. Include your full name, agency or institutional affiliation, address, and telephone number.

The postmark deadline for submissions is March 7. Send your photos to *Fire Management Today* Photo Contest, Attn: Madelyn Dillon, 2150 Centre, Bldg. A, Suite 361, Fort Collins, CO 80526. ♣

HOW TO REACH US: Jim Smalley, Executive Secretary, +1-617-984-7483, jsmalley@nfpa.org



26-28 February 2003
Exhibition & Conference
Hong Kong



Broaden your horizons...

**Your key to unlocking one of the
leading growth markets
in the world**

Brought to you by the publishers of
Fire International.

To find out how your company can benefit by
exhibiting, contact:

Lesley Stevenson

Tel: +44 (0) 1737 855451

Email: Lesleystevenson@uk.dmgworldmedia.com

Fire Asia 2003 International



FIRE
INTERNATIONAL

dmg world media



WHAT'S HOT



DOOR LOCKS

Adams Rite Manufacturing's MS Maglock™ combines the convenience of an electromagnetic lock with the strength of a mechanical lock by using a pair of spring-loaded mandibles that clamp the armature in the event of forced entry. It's easy to install on in-swinging or out-swinging doors of all kinds. For more information, visit www.adamsrite.com. Circle Reader Service Card No. 100

SMOKE-DETECTION SYSTEM

Vision Fire and Security offers a VESDA air-sampling smoke-detection system as an alternative to standard warehouse smoke-detection systems. The system's technology is suitable for mezzanines, general storage, high-bay rack systems, automated pick areas, loading bays, archives, and data storage areas. Visit www.visionusa.com for more information. Circle Reader Service Card No. 101

EXTINGUISHMENT SYSTEM

Hansentek's new AN6400 is a spark-

detection/extinguishment system that's fully expandable up to 64 zones. Each zone can identify every spark in the zone and monitor water flow switches, water pressure valves, heat-tracing systems, and heat detectors. For information, visit www.hansentek.com.

Circle Reader Service Card No. 102

CONTROL PANEL

Harrington Signal Fire Alarm's HS-2402 is a conventional fire-alarm control panel, available with or without an LCD display, that features an optional 2x16 alphanumeric display. The control panel is suitable for smaller business applications because of its 1-to-4-zone feature. For more information, visit www.harrington-fire.com.

Circle Reader Service Card No. 103

COMPUTER SOFTWARE

Tyco Fire Products' SprinkCAD®'s new SprinkFDT software program calculates the water delivery time to one or more open sprinklers on a dry-pipe system. The output analysis shows the system's trip, transit, and steady flow times. The software accepts a variety of dry-pipe valve ratios, and an accelerator can be added at the dry valve. For information, visit www.sprinkcad.com.

Circle Reader Service Card No. 104

SMOKE DETECTOR

The Filtrex™ smoke detector, designed to monitor difficult interior environments, is available from System Sensor. The interior ceiling or wall-mounted detector is a specially enclosed, intelligent photoelectric smoke detector with a sealed enclosure containing two high-density air filters that capture dust, dirt, and water spray while allowing smoke to pass through the sen-

sor. A small fan draws in filtered air samples. One filter is field-cleanable, and the other is permanent to protect the sensing chamber. Internal circuitry can detect a clogged filter or fan failure. For information on the Filtrex Smoke Detector, visit www.systemsensor.com.

Circle Reader Service Card No. 105

PUMPING STATION

Safety Emergency Systems of Kenmore, Washington, announces a major sale of its new SE-1 System to the Caspian Pipeline Consortium of Russia. The SE-1 System, the industry's most advanced pumping station fire protection system, is designed to minimize potential mismatches of unproven suppliers and miscommunication among multicultural technicians and equipment. For additional information, visit www.sesusa.us.

Circle Reader Service Card No. 106

AGENCY APPROVAL

The Federal Aviation Administration (FAA) has approved the Halotron I fire extinguisher as a replacement for ozone-depleting Halon 1211 on civilian commercial aircraft. The Halotron I extinguisher, manufactured by Amerex Corporation of Trussville, Alabama, is the first to complete successfully all required FAA and Underwriters Laboratories, Inc. tests. Halotron I is the most widely used Halon 1211 replacement and is carried by extinguisher manufacturers Amerex, Badger, Buckeye, and Kidde.

Circle Reader Service Card No. 107

WEB-BASED DETECTION

Honeywell Automation and Control Solutions' Notifier division introduces its new UniNet™ Online, a web-based service designed to offer facility managers convenient access to information on building systems integrated on the UniNet network. Using the Internet or an Intranet, facility managers can monitor building systems such as fire, security, CCTV, card access, and more, from one source. For more information, visit www.notifier.com

Circle Reader Service Card No. 108

CONTROL PANEL

Detection Systems' new DS7400XIV4 is an addressable control/communicator for combination burglary and fire-detection systems designed for commercial and high-end residential applications. The control panel offers up to 248 zones and has a user capacity of 200 and 79 expandable outputs. For more information, visit www.detectionsystems.com.

Circle Reader Service Card No. 110

CONTROL VALVES

Viking now offers straight-through deluge and flow control valves in 4-, 6-, and 8-inch (10-, 15-, and 20-centimeter) nominal sizes. The UL-listed and FM-approved valves use the same technology as the original Viking angle-style valves. Featuring grooved inlets and outlets, the new valves are compatible with Viking's EZ or



conventional trim and can be installed vertically or horizontally. They can be retrofitted in existing straight-through systems and, like all Viking deluge valves, resist problems caused by pressure surges. Visit www.vikingcorp.com for more information.

Circle Reader Service Card No. 109



On guard around the world...

**STI Stopper® II is there protecting
against the perils of false fire alarms**

More than an annoying and costly waste of time, false alarms can be deadly, too. By causing people to ignore real alarms or even becoming targets of would-be assailants. That's why you'll find STI Stopper® II units on duty in schools, hospitals, public buildings of almost every kind across the USA and around the world. You'll find other STI Stopper Line products across the globe protecting against vandalism and theft of fire protection equipment. This worldwide acceptance says something about the products that carry our stop-sign logo. It says they work!

Call for our catalog.

800-888-4STI



Safety Technology International, Inc.
2306 Airport Rd • Waterford, MI 48327
Phone: 248-673-9898 • Fax: 248-673-1246
info@sti-usa.com • www.sti-usa.com

Circle 015 on Reader Service Card

7th Fire Suppression and Detection Research Application Symposium

January 22-24 • Orlando, Florida

Hear case studies and cutting-edge technical papers on current suppression and detection research and development. Contact Eric Peterson at (617) 984-7281.

Fire Asia International 2003

February 26-28 • Hong Kong

This NFPA-sponsored conference focuses on new technologies. Email jgdfredson@nfpa.org for more information.

NFPA 2002 National Electrical Code® Seminar

March 3-7 • Irvine, California

The 2002 edition of the *National Electrical Code*® contains hundreds of significant changes that will affect the way you do your job.

NFPA Life Safety Code® Seminar

March 3-7 • Irvine, California

Develop a better understanding of the 2000 edition of NFPA 101®, *Life Safety Code*®, to improve your job performance and help you protect people from fire.

NFPA's Automatic Sprinkler Systems Seminar

March 3-7 • Irvine, California

Stay current with the latest industry developments and practices so you can avoid costly mistakes that could compromise system readiness and effectiveness.

NFPA 72®, National Fire Alarm Code®, Seminar

March 3-7 • Irvine, California

Get up to speed on new and revised provisions in NFPA 72 so you can avoid installation errors, failed inspections, and false alarms. This dynamic seminar covers code rules and gives you the opportunity to practice applying them when specifying, designing, installing, and testing a fire-alarm system for a particular occupancy.

NFPA Emergency Response Planning Workshop

March 3-7 • Irvine, California

Developing and practicing emergency response plans, especially in large, complex structures, is more essential than ever.

International Conference on Tall Buildings: Strategies for Performance in the Aftermath of the World Trade Center

May 8-10, 2003 • Kuala Lumpur, Malaysia

This NFPA-sponsored conference is being presented by the International Council for Research and Innovation in Building Construction and the Council on Tall Buildings and Urban Habitat. For more information, visit www.cibklutn.com.

International Society of Explosives Engineers

February 2-5 • Nashville, Tennessee

The society's 29th annual conference includes educational sessions and exhibits on the latest technology. For more information, visit www.isee.org.

For registration, further information, or a complete list of NFPA's continuing education seminars and workshops, contact NFPA, Continuing Education Department, P.O. Box 9101, Quincy, MA 02269-9101; www.nfpa.org; or (800) 344-3555.

THINK SPECTRALERT®

For all your building protection needs, think SpectrAlert® speaker products

- Designed to yield a greater frequency response and lower total harmonic distortion than other speaker models
- Provides richest, fullest sound for output that more closely matches the source signal
- Compact, low-profile design is aesthetically pleasing in any atmosphere
- Mounts into standard 4" x 4" x 2/8" backbox without an extension ring
- Comprehensive series of SpectrAlert speaker products

Circle the number on the reader service card for a free E•DOCS™ CD-ROM, a comprehensive resource of technical information or call 800/927-6676.



SYSTEM SENSOR
advanced ideas. advanced solutions.™

800/927-6676
www.systemsensor.com

Circle 019 on Reader Service Card



TIGHTEN UP FDC PROTECTION

Control FDC access by installing a locking Knox FDC Cap™ that protects the connection from tampering and potential fire sprinkler system damage. FDC integrity is a safety consideration for school buildings, industrial structures and commercial businesses.

The Knox locking plug is solid stainless steel for long-term protection. Both the plug and a locking Storz cap are quickly and easily removed with a Knox Keywrench™.

Call Today
800-552-5669

KNOX
COMPANY

17672 Armstrong Avenue, Irvine, CA 92614 • www.knoxbox.com
Fax (949) 252-0482 • E-mail: info@knoxbox.com

Circle 033 on Reader Service Card

CLASSIFIEDS

FIRE PROTECTION ENGINEERING

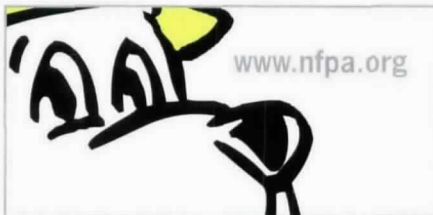
National fire protection consulting firm with career opportunities has a need for entry-level and senior-level fire protection engineers, designers, and code consultants. Opportunities available in Boston, Charlotte, Chicago, Dallas, Denver, Las Vegas, Los Angeles, Miami, Phoenix, San Diego, San Francisco, and Washington, D.C., areas. A competitive salary/benefits package is offered. Send resumes to G. Johnson, Schirmer Engineering Corporation, 707 Lake Cook Road, Deerfield, Illinois 60015-4997, fax: (847) 272-2365, gail_johnson@schirmer-eng.com. EOE/M/F.

CLASSIFIED RATES NONCOMMISSIONABLE

Copy only (per column inch).....\$260

Display (2 1/4 x 4 7/8).....\$1,250

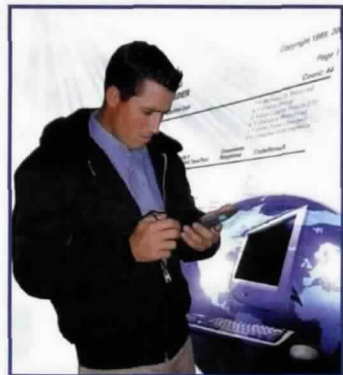
Closing date for the copy is the 25th of the second month preceding issue date. To place your classified ad, contact Advertising, NFPA, One Batterymarch Park, Quincy, MA 02269; telephone (617) 984-7323; fax (617) 984-7090; E-mail dfergason@nfpa.org.



ADINDEX

- ALTRONIX (RSC 001) www.altronix.com 5
- ANSUL (RSC 002) www.ansul.com IFC
- BOSCH SECURITY SYSTEMS (RSC 004) www.boschsecurity.us 1
- EDWARDS SYSTEMS TECHNOLOGY (RSC 006) www.est.net 7
- HALOTRON (RSC 008) www.halotron-inc.com 9
- IPMA (RSC 009) www.ipma-hr.org 72
- KIDDE FIRE SYSTEMS (RSC 010) www.kiddefiresystems.com BC
- KNOX CO. (RSC 033) www.knoxbox.com 78
- MACURCO (RSC 011) www.detectgas.com 72
- NFPA www.nfpa.org 29, 31, 75
- NOTIFIER (RSC 012) www.notifier.com 13
- PELICAN (RSC 005) www.pelican.com 8
- POTTER ELECTRIC SIGNAL CO. (RSC 013) www.pottersignal.com 21
- SAFETY STORAGE (RSC 024-032) www.safetystorage.com 25
- SAFETY TECHNOLOGY (RSC 015) www.sti-usa.com 77
- SES USA INC. (RSC 014) www.sesusa.us 69
- SIEMENS FIRE SAFETY (RSC 016) www.cerbpyro.com 18
- SIMPLEX GRINNELL (RSC 017) www.simplexgrinnell.com/safe 2
- SYSTEM SENSOR (RSC 018, 019) www.systemsensor.com 23, 78
- 3M - NOVEC (RSC 003) www.3m.com 10
- TISCOR (RSC 020) www.tiscor.com 79
- UNDERWRITERS LABORATORIES (RSC 021) www.ul.com 27
- WHEELLOCK INC. (RSC 023) www.wheellockinc.com IBC
- WORCESTER POLYTECHNIC INSTITUTE (RSC 022) www.wpi.edu/+ADLN/Fire 71

ELIMINATE YOUR FIRE CODE INSPECTION FORMS



Fire Inspection Manager from TISCOR is designed to record fire code inspections using PDAs. Handwritten forms and manual data entry are completely eliminated, increasing efficiency and accuracy.

Fire Inspection Manager:

- ◆ Displays the building and structural information for each inspection on the PDA.
- ◆ Lists all of the fire codes and their categories on the PDA.
- ◆ Allows inspectors to choose and assign violations for each site according to what is found.
- ◆ Schedules annual inspections, follow-up inspections and new construction inspections.
- ◆ Shows violation history for each site on the PDA.

Fire Inspection Manager improves your department's overall efficiency while maximizing your operational budget.

To find out how you can eliminate your Fire Code Inspection forms, call TISCOR today at (800)227-6379, xt. 118.



TISCOR[®]
The Mobile Software Solutions Provider
www.TISCOR.com
800.227.6379

LOOKINGBACK

The First Fire Prevention Handbook, 1896

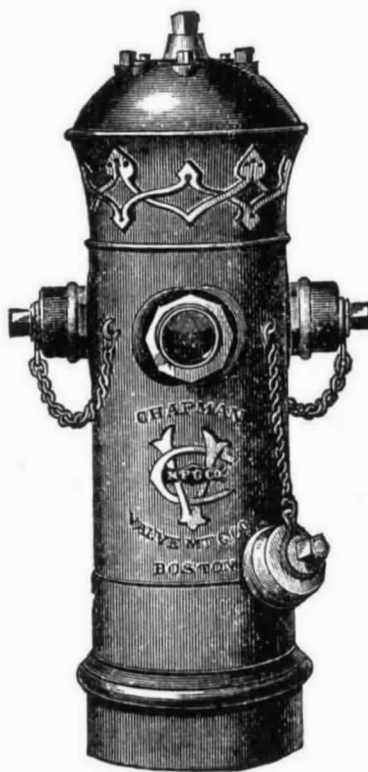
116 THE UNDERWRITERS' BUREAU OF NEW ENGLAND.

HYDRANTS.

Only best quality frost-proof hydrants to be used.

They are supplied with two, three or four hose connections, also independent gates for each connection, if desired.

A gate valve is often installed in the connecting pipe to



CHAPMAN FOUR WAY HYDRANT WITH INDEPENDENT GATES.

hydrant so that if latter needs repairing, its water supply can be shut off and the remainder of hydrant system left intact.

A sufficient number of hydrants should be located about a property to insure the concentration upon any important

THE UNDERWRITERS' B

point, through short hose l
supply. A hose line 100 fo
conditions the most desira
hydrants be so scantily loca
250 feet in length in order

All yard hydrant supply
coated, with bell and spig
below frost line. Sizes of p
equipment, but none should
8, and 10 inches are the
practicable, the pipes shoul
ent points by the water sup

Manufacturers of hydrant
Chapman Valve Manufacturing
The Ludlow Valve Manufactur
The Eddy Valve Company, W

HAND HOSE— $\frac{3}{4}$ -inch li
racks, 25 feet lengths are d
brass nozzle having $\frac{3}{8}$ -in
time of fire.

STANDPIPE HOSE—If ins
location, use 2 or $2\frac{1}{2}$ -in
racks. Length of line as
feet).

Play pipes to be of U
 $1\frac{1}{8}$ -inch nozzles. To be

HYDRANT HOSE—For y
rubber lined, kept in fol
May be tested occasiona
drained and dried before

Play-pipes to be of Und
nozzles. An Underwrite
wound with cord and pain
and smooth bore taper no

There is a large quantiti
Only the *best* should be us

For more information, visit www.nfpajournal.org

RELAX

WE'VE CREATED AN ALL WEATHERPROOF LINE OF APPLIANCES.



Now Wheelock has the broadest line of weatherproof notification appliances in the industry.

With our newest edition of weatherproof speaker strobes, Wheelock goes to extremes.

Wheelock's appliances designed for maximum performance inside and out have an extended temperature range of -31°F to 150°F (-35°C to 66°C). With a Wheelock appliance, whatever the weather you'll be ready.

Now get quality, reliability and cost-effective weatherproof appliances from the name you trust because, when there's an emergency the last thing you need to worry about is the weather.

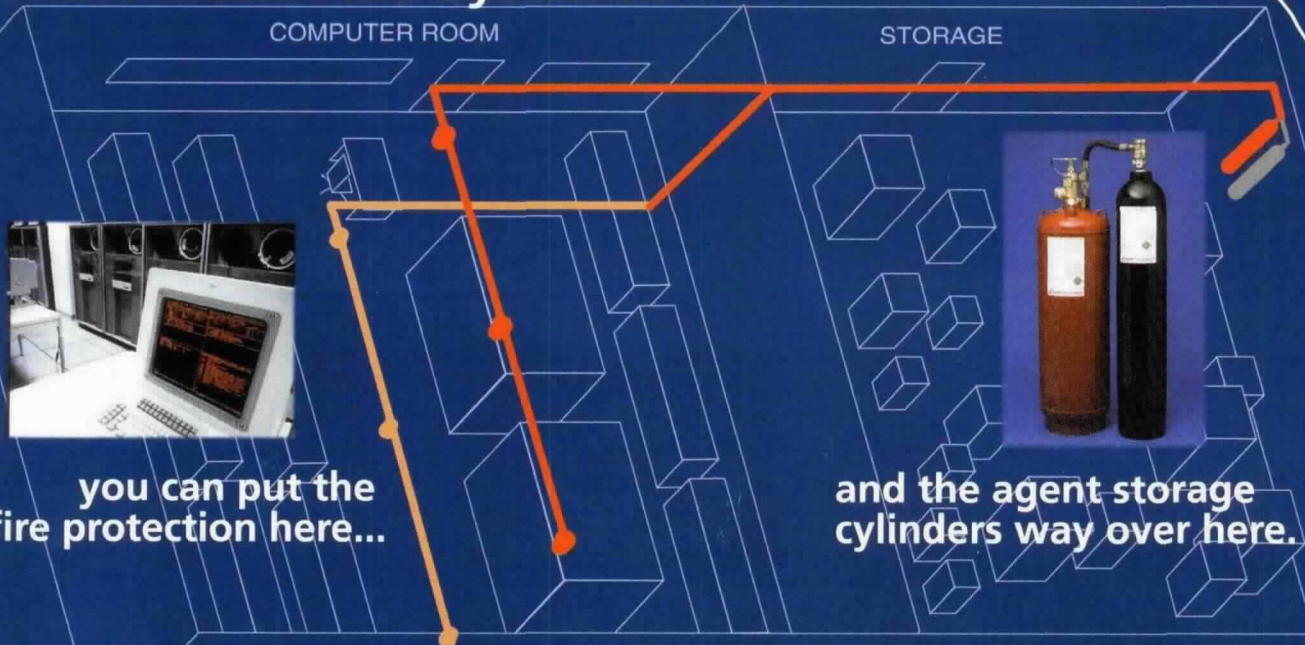
Wheelock's expanded family of Weatherproof Strobes, Speaker Strobes, Horn Strobes, and Multitone notification appliances are available in Series RSSWP, ASWP, AHWP MTWP and ET70WP.

wheelock
Helping People Take ActionSM

Corporate Office 273 Branchport Avenue Long Branch, NJ. 07740 • 1 800 631 2148 • Fax: # 732 222 2588 • www.wheelockinc.com

Circle 023 on Reader Service Card

With the incredible new technology of the Kidde ADS System...



From the two fire protection leaders – Kidde Fire Systems and Great Lakes Chemical Corp. – comes the Kidde Advanced Delivery System. Thanks to what our engineers call “piston flow” patented technology, the Kidde ADS System gives you a design flexibility not previously found in special hazard fire suppression systems. Now you can provide fast, clean (FM-200), safe fire protection for a high-value asset – a vital data processing center or a museum filled with priceless treasures – without disturbing the aesthetics or the operation of the facility.

Our innovative technology uses nitrogen to “push” the FM-200 agent through a piping network into the protected enclosure. This means the Kidde ADS System can offer longer pipe distances for larger hazards, while still using smaller pipe sizes than

regular FM-200 systems. And more economical protection for many of these applications. Not to mention a compact system that blends nicely into its surroundings.

These same characteristics make the Kidde ADS System a virtual “drop in” replacement for existing halon installations. You can use the existing piping and in most cases simply replace nozzles and agent storage cylinders.

So whether you require a fire suppression system with more design flexibility, better performance or lower cost, look no further. The Kidde ADS System. Designed, installed and maintained by a worldwide network of fire protection professionals. Get the specs today... www.kiddefiresystems.com.

Featuring the world's leading clean agent:

 **FM-200[®]**

Call 1-800-872-6527
Kidde Fire Systems
400 Main Street
Ashland, MA 01721
FAX: 508-881-8920