



# Post Indicator



## President's Message – Phil Owens

This is my first message to you as your elected President. I very much appreciate the honor that the membership has bestowed upon me. I will strive to earn your continued confidence and support with the able assistance of your Board of Directors.

There are a number of exciting issues on our horizon.

As I write this message, I have been notified that the Governor has signed **Fire Safety Account bill**. The previous week the Senate passed this bill by a wide margin. This was concurrent with House approval earlier in the week.

Although I was confident in our purpose and a positive outcome, this historic victory for the fire service is the result of planning, very hard work and perseverance by the House & Senate bill authors and our friends in MnFAC. My thanks to our own FMAM legislative representatives Steve Zaccard (Fire Marshal, St. Paul) and Kip LaMotte (Fire Marshal, New Brighton) for their energy and hard work on our behalf. Special thanks from FMAM go also to Dan Winkel (Chief, Andover Fire), Nyle Zikmund (Chief, SBM Fire) and Sherry Munyon (Capitol Hill Associates) for their knowledge, leadership and experience in this effort. Let us move now toward adequately funding the State Fire Marshal Division and wisely distributing the training funds.

The State Fire Marshal Division reports 40 fire deaths state wide in 2005. Although each of these individual fatalities is a tragic loss of life, this is a record low annual fire death total for Minnesota. 2005 also represents the third year in a row that we have achieved a record low state total for fire deaths. Although 2006 began accumulating fire deaths at an alarming rate, we are hopeful that this too will be a record year in reducing fire fatalities. Your hard work everyday saves lives.

Your Board of Directors has worked with the International Fire Marshals Association (IFMA) and the Society of Fire Protection Engineers (SFPE) to bring to Minnesota the renowned course, **Principles of Fire Protection Engineering**. This course will be offered in New Brighton **July 24-27, 2006**. The Board of FMAM has committed to underwrite the costs of this educational experience in order to bring it to our members at a greatly reduced cost. It has been twelve years since this offering has been made in Minnesota and the limited class seating is expected to fill rapidly.

Your Board of Directors continues to work on a new look for our website. The site has been undergoing a much needed face lift and an update of information. My thanks to Board Members John Powers (Fire Marshal, Farmington) and Jon Nisja (Supervisor, SFMD) for their hard work on this project. Look forward to the unveiling of the new FMAM website at [www.fmam.org](http://www.fmam.org) the first part of July.

The quest to adopt the 2003 edition of the International Fire Code (IFC) as the next Minnesota State Fire Code has been abandoned by the State Fire Marshal at the request of the FMAM Board of Directors and others. We appreciate State Fire Marshal Rosendahl's cooperation and understanding in this effort, as his staff had put a lot of work into the 2003 adoption process. That said, your Board felt strongly that it was more appropriate to proceed with the adoption of the 2006 edition of the IFC. That process is now underway with expected adoption at the end of 2006 and an effective date some 90 days later.

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I understand that the Building Codes Division has concurred in the 2006 adoption decision and is pursuing adoption of the 2006 edition of the State Building Code, which should be ready for adoption concurrent with the State Fire Code.

FMAM recommends that you do not purchase the 2006 IFC edition at this time, as your Board is working with the ICC to publish a bound Minnesota edition of the State Fire Code which will contain all state amendments in the text of the code.

The **Governor's Fire Prevention Day at the State Fair** is Friday **August 25, 2006**. Please help FMAM support this important public fire and life safety education event. Board Member Chris Hearnden (Fire Marshal, North St. Paul) is the FMAM representative to the committee. Contact Chris or Public Education Chair Connie Forster (Chief Prevention Officer, SBM Fire) if you would like to schedule a time slot to participate in staffing the FMAM booth.

Please note that due to restrictions placed upon us by the State Fair, free admission passes will be provided only to the FMAM members actually staffing the booth. Unfortunately, we can not offer free passes to your family members.

And finally, welcome to the newly elected and incumbent Board Members. I look forward to working with each of you in the interests of FMAM.

Yours in the fire Service

Phillip Owens, CFI, CFPS  
President

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**Financial Report:  
2006 Budget**

<b>Item:</b>	<b>Budget 2006</b>	<b>Actual (5/8/06)</b>
<b>Income:</b>		
Membership	\$7,500	\$6,155.00
Interest	100	90.92
Merchandise	200	81.00
Seminar/Education	5,500	
Social Event	500	
Income.....	<b>\$13,800</b>	<b>\$6,326.92</b>

**Expenses:**

Merchandise	\$ 400	\$ 0.00
Postage	300	48.06
Professional Services	900	
Web	1,000	
Publications	300	
Public Education	1,000	
Code Development	3,000	
Awards/Gifts	200	105.00
Meeting Expense	500	36.48
Advertising	1,000	2,506.95
Office	100	1,100.46
Legislation	2,000	2,000.00
Seminars	2,500	
Social Events	500	
Misc.	100	

Expenses.....**\$13,800**                      **\$5,796.95**

Checking Balance	\$10,618.06
Savings Balance	\$20,529.34
<b>Total</b>	<b>\$31,147.40</b>

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**Fire Marshal's Association of Minnesota  
MEMBERSHIP MEETING  
Meeting Minutes – March 8, 2006**

**CALL TO ORDER:** President Phil Owens called the meeting to order at 12:50pm at the New Brighton Fire Station.

Tom Brace, Executive Director of the Minnesota State Fire Chiefs presented plaques to Mike Post and Bob Imholte in recognition of their work on the Fire Chief's Code Committee.

Approval of the December 2005 General Membership Meeting Minutes by Kip LaMotte and 2<sup>nd</sup> by Thierry Chevallier, motion passed unanimously.

**TREASURER'S REPORT:**

FMAM's current balance is \$33,628.00 with \$13,228.79 in checking and \$20,398.14 in savings. Motion to approve the Treasurer's Report by Robbie Floyd and 2<sup>nd</sup> by Bob James, motion passed unanimously.

We currently have 179 paid members for 2006 with renewals still coming in.

**REPORTS:**

**Public Education Committee:** Connie Forster reported that the Public Education Conference was held on February 18<sup>th</sup> & 19<sup>th</sup> with 96 attendees. The conference went very well and was a cooperative effort with MNSCU and the Chief's Association.

Connie also updated the members on the Public Education Brainstorming, an informal group of public educators that are working together to share information and ideas. If you're interested contact either Connie or Shelby Wolfe.

**Training:** The Fire Sprinkler Training will be held on April 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, and 13<sup>th</sup>, an additional day for the basic inspection class was added because of the overwhelming interest.

Jon Nisja has been working with IFMA to schedule the four-day "IFMA, Basic Inspection Class". A reminder to our members, FMAM is supplementing this training. The usual cost is around \$600 to \$700 for four days; the board has reduced that cost for our members to be about \$200 to \$300 for the four days.

**Fire Code Hearings:** There have been discussions to not adopt the 2003 IFC but to move forward and adopt the 2006 IFC. The board has sent a resolution to the State Fire Marshal Division not to adopt the 2003 code but to move forward to the 2006 code. The Code Committee has already begun working on the needed State Amendments.

**Governor's Council On Fire Prevention And Control:** Jeff Schadegg reported the Governor's Council is focusing on the Fire Safety Fund.

**Certification Report:** Phil Owens reported that the Inspector I and II tests need to be reevaluated for IFCAS. NFPA has a draft on the requirements for Fire Marshal; it's very interesting and should be looked at.

**Legislation:** Steve Zaccard updated the members on the progress of the Fire Safety Account. This bill has come a long way but we still have quite a way to go. Representative Smith is the Author in the house version of the bill and has been great supporter of the Fire Service.

There has been a bill introduced to reduce the number of fire drills in schools and to mandate Lock

Down and Severe Weather drills

IFMA chapters had some concerns regarding our position on Fire Safe Cigarettes. To clarify, we do believe in fire safe cigarettes, however at this time there are so many issues to be addressed before the initiative would be addressed by the legislative committee. Funding of the State Fire Marshal Division is the current priority.

Legislative updates are available via email through the lobbyist, Capital Hill Associates. Currently FMAM is paying the Chief's Association \$2000.00 a year for the lobbyist. Sherry Munyon has done an excellent job for the Fire Service and has represented us very well.

**State Fire Marshal's Report:** The State Fire Marshal update can be viewed on the State Fire Marshal's Web site at <http://www.dps.state.mn.us/fmarshal/fmarshal.html> . Information is also disseminated through the list server for more information about the list server contact Bob Dahm at <http://www.dps.state.mn.us/fmarshal/ListServer.html> .

Public Education Material, theme kits are available on their web site, for more information "Check It Out" at <http://www.dps.state.mn.us/fmarshal/PublicEducation/MediaThemeKits.html>

There have been 15 fire fatalities in Minnesota so far this year. Lack of smoke detectors is still a problem. The State Fire Marshal's Division has smoke detectors available, if your interested contact Irene Moore at (651) 201-7210 or [Irene.Moore@state.mn.us](mailto:Irene.Moore@state.mn.us) .

The State Fire Marshal's web site is an excellent resource that is easy to access.

**Merchandise:** Sales are still on for merchandise that we have on hand; contact Butch or Kip for orders. We are getting down on the merchandise we have on had. All other clothing can be ordered online, various colors and styles. Videos and CDs are being ordered through Kip.

**NEW BUSINESS:**

John Powers informed the members that he is working with WCCO, I-Team regarding sale practices of fire protection equipment such as smoke detectors and copies of the report will be available on disc.

Bob James informed the members on U.L. information and updates. Bob will be our contact, point person for Minnesota.

MNAFAA is holding classes on fire alarm inspections; plan review etc on April 11<sup>th</sup> – 15<sup>th</sup>. Information will be sent out soon.

Pat Sheehan reminded the members that Fire Prevention Day at the Fair will be August 25<sup>th</sup>. This public education event is the single largest fire public education in the country. The State Fair is very pleased with the efforts over the years.

The FMAM website is being worked on, the old site is there but only in ghost status. Jon Nisja will now be our web master and will maintain the new site. We have a private company that is updating the site and we think you'll be very happy with the new site once it's up and running. If you have any suggestions on what you would like to see on the new site contact us.

Fire Hydrant pens for those in attendance see Jon Nisja. Additional pens are available for \$5.00.

Jon Nisja reported that IFMA is having their 100<sup>th</sup> Anniversary. Gordy Bates informed the members Jon Nisja will be the new IFMA President. Congratulations to Jon. Motion to contribute \$500.00 to IFMA's 100<sup>th</sup> Anniversary Celebration by Robbie Floyd and 2<sup>nd</sup> by Butch Gervais, motion passed unanimously.

#### **ELECTIONS:**

President (1 year term) to replace Bob James: Incumbent – Interim President Phil Owens.

No nominations from the floor. Motion for a white ballot for Phil Owens by Butch Gervais and 2<sup>nd</sup> by Jon Nisja, motion passed unanimously. Congratulation Phil Owens, President.

Vice – President (2 year term), Butch Gervais and Kip LaMotte, no other nominations from the floor. Ballots collected and counted. Congratulation Kip LaMotte, Vice-President. Motion to destroy the ballots by Bob James and 2<sup>nd</sup> by Tom Pitschneider, motion passed unanimously. Ballots destroyed.

Treasurer (2 year term) Incumbent John Powers. No nominations from the floor, motion for a white ballot for John Powers by Thierry Chevallier and 2<sup>nd</sup>

by Kip LaMotte, motion passed unanimously. Congratulations John Powers, Treasurer.

Board Seat (2 year term) Incumbent Vance Swisher. No nominations from the floor, motion for a white ballot for Vance Swisher by Thierry Chevallier and 2<sup>nd</sup> by Bob James, motion passed unanimously. Congratulation Vance Swisher, Board Member.

Board Seat (2 year term) Incumbent Butch Gervais. No nominations from the floor, motion for a white ballot for Butch Gervais by Gordy Bates and 2<sup>nd</sup> by Tom Pitschneider, motion passed unanimously. Congratulation Butch Gervais, Board Member.

Board Seat (1 year term) to replace Incumbent Kip LaMotte. Tom Pitschneider, Roy Kingsley, and Chris Hearnden, no other nomination from the floor. Ballots collected and counted. Congratulation to Chris Hearnden, Board Member. Motion to destroy the ballots by Bob James and 2<sup>nd</sup> by Jon Nisja, motion passed unanimously. Ballots destroyed.

#### **FOR THE GOOD OF THE MEMBERSHIP:**

John Powers is working on this years FMAM summer outing and social event. We have had several ideas and will be sending out information at a later date. If you have any suggestions contact John.

#### **ADJOURN:**

Motion to adjourn at 2:00pm by Ross Parker and 2<sup>nd</sup> by John Powers, motion passed unanimously.

Respectfully submitted,  
Robbie Floyd, Secretary

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#### **Meet the New FMAM Vice President**

Recently elected FMAM Vice President Kip LaMotte was interviewed for this edition of the Post Indicator. He describes his background and experience in the fire service and shares some of the vision he has for fire prevention and FMAM.

***Post Indicator Editor Jon Nisja (PI):** Can you describe your fire service experience for the members of FMAM?*

**FMAM President Kip LaMotte (LaMotte):** I have been in the fire service since 1991. I joined the fire

department as a second generation firefighter (one of 13 in New Brighton) and parlayed my interest into a career in the fire service. I have been employed full time in prevention since 2001. I'm still active as a Firefighter and Fire Marshal and I think that helps me do my job better. I don't always look at problems as an issue for the building owner or occupant; I look at them as Firefighter safety also.

*PI: What do you view as the big fire prevention challenges of the near future?*

**LaMotte:** I think there are many significant challenges: the first one of the challenges for our field inspectors is to learn and interpret computer modeling as it relates to smoke evacuation as an example. Another example would be the computer modeling designers use for dry sprinkler systems to keep sprinkler pipe from freezing. These are just examples I've dealt with within the last few days prior to this interview. Another challenge is the fact that many of us are, as one of my colleagues so eloquently put it, "one clown circuses." It is constantly a challenge to be the Inspector, Public Educator, Investigator, Tour Guide, Plan Reviewer, etc.

*PI: How have you seen fire prevention and inspection activities change over your years in the fire service?*

**LaMotte:** I still feel my experience within the prevention side of this business is evolving all the time. I try to stay open minded about new technologies and practices and stay abreast to changes within our industry. The code book in 1991 was a cute little red book called the UFC. Today's IFC is certainly larger and references more documents.

*PI: What is your advice to new fire inspectors or people who may be coming into this line of work?*

**LaMotte:** My advice to new inspectors would be to educate yourself. Just because you took an inspector class years ago doesn't mean you're an inspector. Our industry is ever changing in many aspects and will be ever changing as long as there is new technology and methods and materials. Performance based designs have been implemented to "augment" designs and there are engineer's who come up with new ideas all the time. The fire service is slow to change some things but inspection personnel are not slow to change.

The industry around us changes and we need to adapt to those changes.

*PI: You have been active in FMAM as a member and a Board Officer for a few years; what do you view as the strengths of the organization?*

**LaMotte:** The strengths of FMAM are our communication and educational commitment to our members. I'm proud of the fact that we as an organization are leaders within our state providing educational opportunities for members and non members alike. I'm proud we've had some success with other classes and we are supplementing resources to provide the "Principles of Fire Protection Engineering" to our members. We have a lot of very dedicated members who are well respected both locally and nationally. I'm proud to be a member of such an organization.

*PI: What do you see as the challenges for FMAM during the next few years?*

**LaMotte:** Challenges for FMAM in the next few years are to continue to be a leader in our state as a resource for our members. We must "keep on keeping on" as the story goes. We must strive to be a resource for our members, we need to adapt to changes and embrace them for the good of the fire service. We need to check egos at the door and continue to educate the public and professionals of our Fire Service industry. We cannot be stagnant with our routines because that's when we will get caught behind the curve. I believe our members are committed and will continue to be resources for our members.

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### **Certification & Professional Qualifications Committee**

Who wants to help draft an examination (written and practical) for Fire Inspector III? The exam would need to evaluate candidates based on the criteria for Fire Inspector III in NFPA 1031. The exam would be used to certify applicants for the Minnesota Fire Service Certification Board. Interested persons should contact Phil Owens.

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## New Hampshire to Require Fire-Safe Cigarettes

*One out of four people in the U.S. now have life-saving requirements in place*

May 31, 2006 — For the second time this month, another state joined the national movement to enhance public safety by mandating that all cigarettes sold in their state be “fire-safe.” Such cigarettes are less likely to ignite fires if dropped or carelessly discarded.

Today, New Hampshire Governor John Lynch signed into law legislation which requires that, beginning in October of 2007, all cigarettes sold in the state be low-ignition strength (commonly referred to as “fire-safe”) -- as established by recognized standards. Such cigarettes have been proven to be far less likely to ignite clothing, bedding, or other material if left unattended. Illinois signed similar legislation this month as well.

Cigarette-ignited fires are the leading cause of home fire deaths in the United States, killing 700 to 900 people annually, smokers and non-smokers alike. New Hampshire joins New York, Vermont, California and Illinois in mandating the sale of “fire-safe” cigarettes only. Several other states, including Massachusetts, are considering similar laws. Fire-safe cigarettes are also mandated throughout all of Canada.

“Fire-safe cigarettes provide us with the greatest potential to make the next big leap in fire protection,” said James M. Shannon, president of the National Fire Protection Association (NFPA) -- a member of the Coalition for Fire-Safe Cigarettes. “By joining, New York, Vermont, California and Illinois, today’s action in New Hampshire means that approximately 25 percent of Americans will be better protected from devastating cigarette fires.”

The Coalition for Fire-Safe Cigarettes, officially launched in March, includes fire service members; medical and public health practitioners; advocates for consumers, the elderly, and people with disabilities; and others. Coalition members are committed to saving lives and preventing injuries by reducing the threat of cigarette-ignited fires. The Coalition has asked tobacco companies to start selling fire-safe cigarettes nationwide and is gathering support nationwide through an online petition, [www.firesafecigarettes.org](http://www.firesafecigarettes.org) and is working

to see fire-safe cigarette legislation passed in every state.

Jim Burns, president of the National Association of State Fire Marshals (NASFM) and New York State Fire Administrator said during a recent Coalition event, “Nationwide use of fire safe cigarettes will be one of the most important steps we can take to make people safer from fires.”

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## FMAM Website

The FMAM Website is undergoing an overhaul. Look for an improved website with more features and a different look in the near future.

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## State Fire Marshal Telephone Number Changes

The telephone numbers have changed for the Minnesota State Fire Marshal Division. Effective immediately, please use the following numbers:

Main Number	(651) 201-7200
Fire Code Questions	(651) 201-7219
Fax	(651) 215-0525
Bell, Patricia	Office Mgr. (651) 201-7203
Bernardy, Dan	Public Educ. (651) 201-7214
Celany, Cindy	Clerical (651) 201-7207
Dahm, Bob	Chief Deputy (651) 201-7202
Dickey, Christine	Clerical (651) 201-7208
Gierok, Nora	MFIRS/Data (651) 201-7209
Kaiser, Dan	Fire Protection (651) 201-7215
Kleis, Rick	Chief Invest. (651) 201-7206
Moore, Irene	MFIRS / Data (651) 201-7210
Nisja, Jon	Sup'v-Codes (651) 201-7204
Peterson, Ralph	Fire Protection (651) 201-7216
Roen, Danay	Clerical (651) 201-7211
Rosendahl, Jerry	State FM (651) 201-7201
Samuelson, Randi	Clerical (651) 201-7212
Sheehan, Patrick	Sup'v-Health (651) 201-7205
Stegura, David	Fire Protection (651) 201-7217
Swanson, John	Codes/School (651) 201-7218
Whitney, Marian	Clerical (651) 201-7213

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## New Bloomington Fire Marshal Named

The new Fire Marshal in Bloomington is Gene Dugal. Gene replaces Bob James, who left for a position with UL last year. Gene previously worked as a fire inspector in Bloomington and is a retired

member of the Bloomington Fire Department. Gene has also been active as an FMAM representative on the MSFCA Code Committee and the U of MN Annual Building Officials Institute.

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### **Dave Stringfield Leaves U of MN Fire Inspector Position**

Fire Protection Engineer Dave Stringfield has left his position as Fire Inspector for the University of Minnesota to join Summit Fire Protection's consulting and engineering section. Dave has represented FMAM on the MSFCA Code Committee for several years and has been very active with FMAM conducting training, especially on fire alarm systems and NFPA 72. Best of luck to Dave in his new position in the private sector.

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### **St. Paul Fire Prevention Has a New Engineer**

Angie Leitner has joined the St. Paul Fire Prevention Bureau as an engineer. Angie has a BS degree in Mechanical Engineering from Purdue University and intends to pursue her Masters degree in Public Administration at Hamline University. Prior to being hired by St. Paul, Angie worked for North Star Fire Protection in Eagan. Angie becomes a second generation fire department employee; her father – Dick Leitner – is a Captain on the SPFD.

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### **Fire Marshal Saves a Life**

We all know that we are in the business of saving lives. Recently, St. Paul Fire Marshal Steve Zaccard found a new way to do so. Fire Marshal Zaccard donated a kidney to one of his employees. St. Paul Fire Inspector James Thomas suffered kidney failure and was undergoing dialysis three times a week. Zaccard could see the daily effect of the disease progress on Thomas and offered the donation. After months of testing, the surgery was a great success and both have now returned to duty.

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### **Minnesotan is Elected President of the International Fire Marshals Association**

State Fire Safety Supervisor Jon Nisja was elected President of the International Fire Marshals Association (IFMA) at their annual meeting in conjunction with NFPA's World Safety Congress and Exposition in Orlando on June 5, 2006.

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### **FMAM Booth at Minnesota Safety Council Tradeshow**

St. Louis Park Fire Marshal Cary Smith and St. Louis Park Fire Inspector Peter Ludwig staffed the FMAM Booth at the Minnesota Safety Council Tradeshow last month at the Minneapolis Convention Center. Smith reported lots of positive feedback on FMAM's presence and information at the tradeshow. FMAM provided fire safety and emergency preparedness information. This tradeshow attracts safety professionals from larger companies and corporations in addition to government and insurance representatives. SLP FD had their portable fire extinguisher demonstration trailer at the FMAM Booth.



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### **Fire Prevention Day at the Minnesota State Fair**

Once again this year, FMAM will have a booth at the Minnesota State Fair for Governor's Fire Prevention Day on Friday, August 25<sup>th</sup>. This event has been dubbed the largest fire safety event in the United States (according to the U.S. Fire Administration). FMAM members can sign up for the booth and will receive one ticket to enter the Fair. If you are interested in working a shift or if

you have any questions contact Chris Hearden at (651) 747-2439 or [CHearden@ci.north-saint-paul.mn.us](mailto:CHearden@ci.north-saint-paul.mn.us) .

This year we are planning to have a firefighting video game located next to the FMAM tent. This firefighting video game is popular in video arcades. It is FMAM's intention to try to educate individuals who are standing in line waiting to play the game. FMAM is also looking for suggestions for a theme or message to display. We are also trying to work out a deal where contestants would need to take a fire safety test or quiz before playing the game.

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### **Sprinkler Installation Issues**

At the March, 2006 Membership meeting, FMAM hosted a panel discussion on sprinkler installation issues. Representing sprinkler contractors was Al Moy from Sentry Fire Protection and Bill Yorkson from National Automatic Sprinkler Corporation. Representing AHJs were Gordy Bates from the Minneapolis Fire Department, Kevin Gravalin from Chaska, and Ralph Peterson from the State Fire Marshal Division.

There was an excellent discussion as the panelists presented their points of view. The bottom line seemed to be that the sprinkler contractors wanted more consistency and uniformity from jurisdiction to jurisdiction. AHJs countered that they needed some flexibility to deal with unique issues in their communities.

The following is a list of discrepancies that were identified by the contractors as impediments:

1. Location of inspectors test valve - at riser, at remote head?
2. FD locations - street side of building, closest to hydrant, near parking lot?
3. Type of FD connection - Stortz, standard?
4. Size of FD pipe - to substitute for system demand or supplement demand?
5. Standard OSY valves, wall or post indicator valves?
6. Detector check, RPZ, backflow, standard check valve?
7. Permits- when required - all cases, \$1,000 job or more, \$2,500 job or more?
8. Speculative building design - .20 gpm per sq ft over remote 3,000, .42/2,000, or Ordinary Hazard?

9. Safety factors- 10 psi, 10%, no safety factor?
10. Type of pipe for dry systems, black, id/od, galvanized #10, galvanized #40?
11. Hydro tests - when required - all jobs, 20 heads or more, more than one head off one outlet?
12. When can work start - call Fire Marshal, work authorization, after permit issuance?
13. Alarm test, is sprinkler contractor responsible or alarm contractor?
14. Permits - pick up in person or mail?
15. Residential systems - is metered backflow mandated?
16. Inspection fees to cities who have given plan review and permit issuance to the State?
17. Standpipe requirements - 100 psi, 65 psi, or fire truck supplemented?

All of the panelists were extremely professional and seemed to appreciate the other points of view. FMAM and the sprinkler contractors vowed to continue working on this issue.

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### **Some New Features and Sections for the Post Indicator**

As Editor, I am trying to add some new features and sections to the Post Indicator newsletter. One section was the "Meet Your Board"; so far this section has had interviews with President Phil Owens (December, 2005) and Vice President Kip LaMotte (this edition).

We have also expanded the "FMAM People" section where we look at the job changes, promotions, retirements, accomplishments, and human interest stories of our members. We are always looking for more information about the good things that our members are doing.

Another new feature will be an in-depth look at important fire protection issues. In this edition of the PI, we look at needed fire flow calculations. This feature is being added to assist fire officials in making fire protection determinations.

If you have an issue that you would like to see researched, please let us know. If you have a topic that you have researched and are interested in sharing with other fire safety professionals, please feel free to forward this for a future PI article.

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## NEEDED FIRE FLOWS

By Jon Nisja, State Fire Safety Supervisor

Lately, we seem to be getting a number of questions on determining the amount of water needed for firefighting purposes; this is also commonly called needed fire flows (NFF). This is an area where fire prevention and firefighting operations overlap; the fire marshal or fire inspector must have some firefighting knowledge and an appreciation of the local firefighting tactics, philosophies, and operations to determine NFF. There are a number of methods available for computing NFF and these will be discussed in some detail.

### Firefighting Strategies

There are three major firefighting strategies to be considered in determining NFF: offensive firefighting, defensive firefighting, and exposure protection. Offensive firefighting can also be described as an aggressive interior fire attack. In offensive firefighting, firefighters don protective equipment and enter involved buildings with hand-lines (typically 1 1/2" or 1 3/4" sizes) to extinguish the fire. Offensive strategies typically use relatively small amounts of water; 100 to 500 gallons per minute (GPM) would be common. Fire flows exceeding 1,000 in an offensive firefighting mode would be fairly rare.

Defensive firefighting is sometimes referred to as "surround and drown"; it often involves extinguishing the fire from the outside of the building. Although hand-lines can be used, defensive firefighting often involves the use of larger diameter hose (2 1/2" or larger) or fixed equipment (turrets, aerial devices, monitor nozzles, etc.). Defensive firefighting often involves very large amounts of water.

Exposure protection is the practice of basically ignoring or "writing off" the property that is burning and concentrating firefighting resources on keeping the fire from spreading to adjacent buildings or property. In common construction methods of decades ago, buildings were constructed next to each other or in very close proximity; this resulted in a number of situations where a single building fire spread through multiple buildings.

Exposures are generally considered to be buildings or objects within 30 feet; this is why many of the

model building codes require openings in exterior walls to be limited in area or protected (i.e. fire-rated) if they are within 30 feet. In some high hazard buildings or operations, exposures may be extended to 50 feet or more. Exposure protection, similar to defensive firefighting, can involve large amounts of water.

Firefighting strategies are often a judgment call based on the conditions observed by the incident commander. Unfortunately, firefighting strategies can also change throughout the incident. An incident commander may initially attempt an offensive fire attack out of concern that there may be victims to rescue and then transition to a defensive strategy once it is determined there is no life safety risk or that the fire is beyond the available resources.

### Types of Water Supply

Effective firefighting water supplies depend on two factors: flow (in GPM) and pressure. Higher pressure generally means more flow through the same size orifice, pipe, or hose. Fire pumps, either on fire apparatus or installed inside a building, can boost pressures. A common misconception is that a pump can increase the amount of water. Pumps cannot manufacture water; they can only increase the pressure available. If the water system is only capable of flowing 1,000 GPM, a pump operating at 1,500 GPM will exceed the supply and possibly cause collapse of the water mains. Pumping is generally assumed to be ineffective and dangerous at pressures less than 20 PSI.

In many communities the municipality provides a water supply through a water utility. As a general rule, municipally provided water supplies will meet or exceed the NFF. There are cases where the NFF for very large buildings or buildings constructed near the borders of the municipality (or near the end of the municipal water system) may exceed the available supply.

In areas without a municipal water supply, firefighters must use other methods, including hauling (or tankering) water, drafting from natural sources (lakes, ponds, rivers), or using on-site sources (wells, cisterns, swimming pools, dry hydrants, etc.).

Some fire departments have developed some very efficient tankering operations using drop tanks and water shuttle operations with neighboring

departments. However, these operations are limited by the size and number of drop tanks and tankers in addition to the travel distance from the water source to the fire.

The better a municipal water supply, the lower the insurance premiums paid by property owners. A large portion of the fire protection rating given by the Insurance Services Office (ISO) for a community is based on the available water supply.

There are cases where the building or facility needs to provide its own water supply as its NFF exceeds the municipal water supply or it is located in an area without a municipal supply. The state fire code requires that a water supply be provided for new buildings or additions to existing buildings.

Water is needed for firefighting; almost all firefighting tactics use water. Simply because there is no municipal water supply does not negate the responsibility of the property owner or developer to provide a firefighting water supply. Fire burns the same in areas with or without a water supply but the outcomes from a fire will be radically different in areas which lack water or have inadequate supplies.

I have been asked by chiefs from rural or small town fire departments on how to enforce this fire code provision in areas without a municipal water supply. If the fire department is able to realistically provide the NFF from normal tanker or drafting operations, in my opinion, that satisfies the intent of the code. If, however, the building or operation requires a NFF in excess of what the fire department is able to realistically or efficiently provide, the intent of the fire code is for the property owner to provide an approved water supply. For instance, a small 3,000 square foot convenience store would not produce excessive NFF demands; the NFF would be similar to a single family home. As can be seen later in the examples, a 60,000 square foot mercantile building would require a NFF in excess of what a fire department can do without extraordinary assistance.

### NFF Calculation Methods

There are several methods for calculating the needed fire flow. The effective maximum limit for NFF depends on the local fire department's capability. As a practical limit, most of the methods cap the NFF at 6,000 to 8,000 GPM which is the equivalent of four to five engines pumping at 1,500

GPM (the maximum capacity of most high-end fire department pumping apparatus).

The following is a description and comparison of these methods.

#### Method #1: International Fire Code (IFC):

The IFC contains an appendix chapter (Appendix B) with a table (Table B105.1) that lists the NFF based on the size of the structure and its construction type. These values are sometimes referred to as the "ISO short formula" although this author is unable to substantiate a link between the two. The advantages of this method:

- Fairly easy to use,
- Consistent with construction types.

The disadvantages of this method:

- Produces relatively high NFF for small buildings (1,500 GPM is the minimum),
- You need the IFC to determine the NFF.

#### Method #2: Uniform Fire Code/NFPA 1 (UFC/NFPA 1):

The UFC/NFPA 1, now published as part of NFPA 1 (Fire Prevention Code), contains Annex H and Table H.5.1 dealing with NFF. The values in this table are identical to IFC Table B105.1; the only difference is the construction type designations used. Both IFC and UFC methods came from the Uniform Fire Code when it was a separate, regional fire code.

#### Method #3: Insurance Services Office (ISO):

ISO has one of the oldest and most established methods for calculating the NFF. To estimate the amount of water required to fight a fire in an individual, nonsprinklered building, ISO uses the following formula:  $NFF = (C) \times (O) \times (1+(X+P))$

where

NFF = the needed fire flow in gallons per minute (gpm)

C = a factor related to the type of construction

O = a factor related to the type of occupancy

X = a factor related to the exposure buildings

P = a factor related to the communication between buildings

To determine the portion of the NFF attributed to the construction and area of the selected building, ISO uses the following formula:  $C = 18F(A)^{0.5}$

where

F = coefficient related to the class of construction

= 1.5 for Construction Class 1 (wood frame construction)  
 = 1.0 for Construction Class 2 (joisted-masonry construction)  
 = 0.8 for Construction Class 3 (noncombustible construction and Construction Class 4 (masonry noncombustible construction)  
 = 0.6 for Construction Class 5 (modified fire-resistive construction) and Construction Class 6 (fire-resistive construction)  
 A = effective area

The entire ISO calculation method can be downloaded from:

<http://www.isomitigation.com/downloads/ppc3001.pdf>

The advantages of the ISO method:

- Extensive track record,
- Deals realistically with smaller buildings (down to 500 GPM minimum NFF),
- Consistent with ISO grading schedule for municipalities.

The disadvantages of this method:

- Involves some calculations,
- Construction types are not consistent with the model building and fire codes (but not totally dissimilar to common fire service terminology either).

#### **Method #4: Iowa State University (ISU):**

In the 1950s and 1960s, ISU did a number of firefighting studies on NFF. The studies were based on compartment fires using fog nozzles. The findings of the study showed that most compartment fires could be extinguished based on the conversion of water to steam and the associated expansion from liquid to gaseous states. It was determined that a gallon of water converts to just over 200 cubic feet of steam. ISU added a 100% safety factor based on the inefficiencies of firefighting and developed the following formula:  $NFF = \text{Volume of space} / 100$ . The volume is computed as the cubic feet of space (length times width times height).

The advantages of this method for determining the NFF:

- Very simple to use (at most you need a simple calculator),
- Consistent with many fire service pre-planning methods.

The disadvantages of the ISU method are:

- Intended for compartment fires using offensive fire attacks; does not work well for large, open spaces,
- Does not factor in construction types, exposures, or occupancy hazards (fuel loads); there are some derivations of the ISU formula that address these factors.

#### **Method #5: National Fire Academy (NFA):**

Several years ago, the NFA developed a method for calculating NFF based on the area involved. The area is computed in square feet (length times width). The formula is:  $NFF = \text{Area} / 3$ .

The primary advantage of the NFA method is:

- Very simple to use.

The primary disadvantages of this method:

- It produces very high NFF,
- Does not factor in construction types, exposures, or occupancy hazards (fuel loads).

#### **Method #6: Illinois Institute of Technology (IIT):**

The Illinois Institute of Technology Research Institute conducted a study of 130 fires in the Chicago area and developed the following methods for computing NFF for residential and commercial buildings:

$$NFF \text{ (for residential occupancies)} = 9 \times 10^{-5}A^2 + 50 \times 10^{-2}A$$

$$NFF \text{ (for other occupancies)} = -1.3 \times 10^{-5}A^2 + 42 \times 10^{-2}A$$

where:

A = Area of the fire (sq ft)

The IIT method had the following advantage:

- It was based on actual working fires.

This method has the following disadvantages:

- It involves a fairly complex mathematical formula,
- It is not widely used.

#### **Method #7: National Fire Protection Association Standard 1142 (NFPA 1142):**

NFPA 1142 is the *Standard on Water Supplies for Suburban and Rural Fire Fighting*. It calculates the minimum water supply for structures without exposures using the following formula:

$$\text{Gallons} = (V / OC) \times CC$$

It calculates the minimum water supply for structures with exposures using the following formula: Gallons = (V / OC) x CC x 1.5

where:

V = Total volume of the structure

OC = Occupancy hazard classification number

CC = Construction classification number

For NFF (in GPM), NFPA 1142 uses the same formula as ISO.

The advantages of this method are:

- This is a nationally recognized standard and calculates both flow (in GPM) and total water needed (gallons),
- It considers factors of fuel loading, construction type, and exposures.

The disadvantages of this method are:

- Involves calculations (although there are some tables in the annex to assist),
- Involves the use of a standard not well-known to many code officials.

**Which Method to Use?**

Each method has its advantages and disadvantages. This author is not advocating one method over another. It is recommended that you select a method that you are comfortable with and use it. Code officials are urged not to “pick and choose” different methods based on the most restrictive requirements for a particular project. The following section provides some comparisons of various methods. The State Fire Marshal has a policy on needed fire flows on its website at:

<http://www.dps.state.mn.us/fmarshal/FireCode/INS37FireDepartmentWaterSupplies.pdf> . It specifies a minimum of 250, 500, and 750 GPM for light, ordinary, and extra hazard, respectively, for areas with no municipal supply.

**Comparison of Methods**

The following are some examples of the various methods applied against common buildings. Many methods use different factors so comparing one against another often involves making some assumptions:

**NFF vs. Sprinklered Buildings**

One way to substantially reduce the NFF is to sprinkler the building. Most of the NFF calculations are based on non-sprinklered properties. If the building is sprinklered, the NFF can be reduced (up to 75% in some cases). Conventional firefighting is a fairly inefficient means of delivering water while sprinkler systems deliver water directly to the seat of the fire. In some NFF calculations, a 5,000 sq. ft. building would require 500 GPM while the sprinkler design for that building would be more like 200 GPM.

Another common misconception is that a larger municipal water supply (more water and larger pipe sizes) is needed for sprinklered buildings. This simply is not true; to the contrary the reverse is true. Municipalities can often reduce water main sizes and extend hydrant spacing if the buildings in the area are sprinklered. Sprinkler system demands in excess of 1,000 GPM are rare; NFF often start at 1,500 GPM.

<b>Bldg./Method:</b>	<b>School:</b>	<b>Office:</b>	<b>Apartment:</b>	<b>Storage:</b>	<b>Retail:</b>
IFC / UFC	2,000	3,500	2,750	6,500	4,500
ISO / NFPA 1142	2,391	4,508	3,681	7,606	4,383
ISU	2,000	7,200	2,400	9,000	10,000
NFA	6,666	12,000	8,000	20,000	33,333

**Notes:**

School: 100,000 sq. ft. divided into 20,000 sq. ft. fire areas. One-story; Type II-A construction.

Office: 36,000 sq. ft. Two stories with open stairs; Type V-A construction.

Apartment: 24,000 sq. ft. per story. Three stories with enclosed stairs; Type V-A construction.

Storage: 60,000 sq. ft. One story (15 feet in height); Type V-B construction.

Retail: 100,000 sq. ft. One story; Type II-B construction.

**FMAM Meeting Notice & Calendar**

Wednesday, June 14, 2006

New Brighton Public Safety Center - 785 Old Highway 8  
12:30 p.m. – Education Program: Fire Prevention Software  
1:30 p.m. – Business Meeting

**Other Important Dates:**

July 24-27 – Principles of Fire Protection Engineering – New Brighton  
Monday, September 11, 2006 – World Trade Center Events of 9/11 (5 Year Anniversary) – New Brighton  
Wednesday, September 13, 2006 – Quarterly Meeting  
Wednesday, December 13, 2006 – Quarterly Meeting

Fire Marshals Association of Minnesota  
Post Indicator; Jon Nisja - Editor  
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