CFSA News

IN THIS ISSUE

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Fire Safety is Everybody's Business

President's Message

Your Board of Directors is excited about our upcoming Technical Sessions, Dinner Meetings, Annual Education Forum and the news from our Scholarship Committee.

Our February Technical Session, "Technical Changes to the Ontario Building Code", featured speaker Alek Antoniuk, Coordinator, Code Development, Building Development Branch. This Session sold out so quickly that many people were left unable to register. The good news is that Mr. Antoniuk will give a similar session at the Annual Education Forum thus providing a second chance to hear the presentation.

The next two Dinner Meetings also feature great topics. On February 27th, we have Julian Fantino, Commissioner of Emergency Management speaking on the "Role and Responsibilities of the Commissioner's Office and Emergency Management Ontario", and on March 22nd Fred Leber, LEBER-RUBES INC., will speak on "Fire Alarm Design Challenges in Complex Buildings". Already, we have received a large number of registrations for the February Dinner Meeting and some for the March Meeting. In addition an excellent program has been arranged for the Annual Education Forum on April 19. This promises to be a full and memorable day.

Information on all of the above is available of the CFSA website – www.canadianfiresafety.com. I hope to meet you at one or all of these events!

Our Scholarship Committee has increased the number of student scholarships to a total of 8 with three at $500.00, four at $850.00 and the Peter Stainsby Award at $1,000.00.

CFSA is 35-years-old and we are going to celebrate! A committee is hard at work arranging the celebrations and we will post the information on our website when they are finalized.

Fire Safe Ontario Committee update: As you know, Bill 141 died a natural death when the Ontario Parliament adjourned for the summer. Thankfully, MPP Linda Jeffrey reintroduced the Bill at the earliest possible moment when Parliament re-convened. Now Bill 2 - it has passed 1st and 2nd readings and is sitting in Committee. Bill 2 requires all new residential buildings – single, semi, row houses, low rise and high-rise apartment buildings to be sprinklered.

The Fire Safe Ontario Committee still needs your help. Please contact your MPP, preferably by letter, and ask them to support the Bill and do all they can to get the Bill through the (Parliament) Committee stage and final reading. Most of you will know how hard it was to have smoke alarms accepted and how perseverance achieved a success that has saved many lives. We are currently in a similar situation with the residential sprinklers as we were in the pre smoke alarm acceptance days. Anything you can do to help this Bill pass will be appreciated by those whose lives you help save.

Thank you for your support of CFSA as we continue our endeavours to fulfill our Mission Statement – "To disseminate fire and life safety information and create a fire safe environment in Canada".

Alan Kennedy
CFSA Presidet

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Editorial

Editor's *Note*

It never ceases to amaze me how fast time goes by. The Canadian Fire Safety Association is coming up on its 35th anniversary. 35 years of promoting the science and improving the methods of fire protection and prevention, obtaining and circulating information of these subjects and securing the understanding and cooperation of the Canadian Public in establishing proper safeguards against loss of life and property by fire.

To celebrate, the CFSA has created a special edition of the logo, which you should now see on our documents. We are also in the process of updating our look by releasing a new version of the website and the CFSA News (next edition). When the board reconvenes in the fall, look for our special 35th anniversary dinner to celebrate with us.

Featured in this newsletter are reviews on the November technical session "Fire Protection of Steel Buildings" and the November dinner meeting "Fire Investigations from the Office of the Fire Marshal". In addition articles regarding the changes to installation requirements of smoke alarms in the Ontario Fire Code, smoke alarm safety and maintenance tips and mine fires and explosions (from NFPA). As always, new NRC and ULC publication abstracts have been included as well. The feature article for this edition of the Newsletter is on "Life Safety and the Dark Side of Speed".

As we shed our previous look and shift to updated style, we look forward to any comments, article suggestions or submissions or any questions you might have.

Janet O'Carroll

2006 scheduled events

Dinner Meetings

Date	Topic	Presented by
February 27	Commissioner of Emergency Management	Julian Fantino
March 22	TBA	

Technical Sessions

Date	Topic	Presented by
March 1	Facts and Fiction of Gypsum Board Fire Resistance Ratings	Bob Mercer, Manager, Technical Services CGC Inc.

Annual Education Forum

Date	Topic	Location
April 19	The Transition of Codes	Richmond Hill, ON

Other Events

Date	Topic	Location
March 8 - 9	Seminars on Technical Changes in the 2005 National Construction Codes; Visit: www.nationalcodes.ca	Toronto North (Vaughan) Toronto West (Airport Rd)
May 3 - 5	Carleton University – Fire Hazard, Risk Analysis and Risk Management Short Course	Ottawa, ON
May 6 - 10	OAFC Annual Meeting and Seminar	Toronto, ON
May 7 - 13	Emergency Preparedness Week	
May 28 - June 2	2006 FABC Annual Conference and Trade Exhibition	Penticton, BC
June 4 - 8	NFPA World Safety Conference & Exposition	Orlando, FL
June 5 - 8	OMFPOA 50th Annual Symposium	Barrie, ON
June 13	CFAA Annual Technical Seminar	Toronto, ON
June 14 - 16	6th International Conference on Performance-Based Codes and Fire Safety Design Methods	Tokyo, Japan
October 8 - 14	Fire Prevention Week	

Life Safety and the **Dark Side of Speed**

This article was provided by David Sylvester of Morrison Hershfield.

As life safety knowledge workers our primary focus is to provide life safety solutions that protect society from the ravages of fire. How we get there is as important as what we achieve.

Language and the Dark side of Speed

Time is always an issue in the world of life safety systems. In an effort to speak efficiently, some fire protection knowledge workers aka "propeller heads" tend to rely on life safety system nomenclature. Three Letter Acronyms (TLA) and abbreviations are used to communicate quickly. Depending on the audience, the concepts are either understood or not.

In the past few years we have become increasingly aware of the TLA and abbreviations that have become integrated into the language and discipline of life safety.

Now remember an acronym is defined as an abbreviation that when constructed becomes a word, like NASA. Words like FBI and CIA are not acronyms; they are just abbreviations representing questionable activities by questionable authorities. An acronym is not just any set of initials. It applies only to those pronounced as words. For example CSIS is an acronym, representing questionable activities by questionable authorities.

Fire alarm system nomenclature is stacked with acronyms and abbreviations. The service providers, sales staff, and even Consulting Engineers typically will succumb to the use of the TLA.

Imagine an entire life safety systems language communicated solely with the use of acronyms and abbreviations. You would have to learn that every name was a combination of several epithets, each designating a specific trait or capability. Compiling all the words that describe the desired trait would generate these epithets: cognates and etymons, from the language associated with the life safety systems technology.

An example of acronyms and abbreviations in this new language reflecting the syntax and emotions of the engineer are as follows:

Acronym Nomenclature: This MMB on the DCC is FUBAR it think we are SOL so lets TGIF for today.

English Translation:

"This Main Mother Board on the Display Command Centre (annunciator) is defective, we will have stop for the day"

Systems and the Dark side of Speed

The antiquated fire alarm system of the 1970's relied on current sensing circuits and conventional electron flow. Operating a manual pull station, in effect shortens the circuit path. As a result less resistance is provided in the circuit, the current draw increases. This increase in current draw triggers, via current flow through a diode matrix, relays to operate the bells.

Physicists tell us that electrons travel faster than the speed of light. This is a reliable and proven form of life safety equipment.

In fact, if the fire alarm conductors serving the manual pull stations were to melt together, i.e. a short circuit, the same effect as operating a manual pull station is achieved. The bells will ring!

So an antiquated fire alarm system actually provides distributed linear heat detection via its initiating wires. Where ever the fire alarms initiating cables are located, (and if they melt together and short) you will have limited heat detection. I don't think ULC or the Fire Marshal would accept this proposal but it is an interesting proposition.

When it comes to audible signal response, and we know that electrons are so fast, in essence the old conventional systems operate at the speed of greased lightning. So why did the industry switch to computer based technology? How does the CPU speed effect system performance?

Typically, the majority of leading industry fire alarm system manufacturers communicates. electrically encoded signals between fire alarm control and display equipment, such as display command centre, central control units, and distributed transponders. The electrically encoded signal travel through a single twisted pair of wires on a Telecommunications Industry Association (TIA) recommended standard protocol (RS-485).

This chosen protocol is defined as a Differential Data Transmission System (DDTS) or a multi-drop network. This means that multiple transmitters and receivers may reside on one line or twisted pair of wires. Only one transmitter may be active at any one time. Each fire alarm manufacturer has assembled and modified the RS-485 protocol to suite their proprietary electronic communication requirements. RS-485 enables multiple fire

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alarm central control units or distributed transponders to reside on one pair of wires.

Typically, fire alarm system initiating or *electrically encoded signals* are generally transmitted through the following programming layers:

1. A smoke detector senses particles of combustion and transmits device status information to the transponder or central control unit.

   At the fire alarm transponder or control unit system software/firmware formulates a message to indicate a specific operation.

   Next, a message is encoded as a string of characters or "packets". For example: the message "SDONXYZYYYMMDDH MM SS" is transmitted to the Display Command Centre (DCC). The above message is categorized as the "Application/Presentation Layer". This Layer defines the message and content to be packaged and translated at the lower levels. (i.e. Turn on all evacuation signals and report at all Transponders)

2. Next the "packets" of data received at the display command centre initiates a "Session/Transport Layer" that now adds more characters to the message. The "Session/ Transport Layer" tracks the data's start, stop, and packet order. It ensures complete message delivery, since only one transmitter may be active at any one given time.

   For example the above "Application/Presentation Layer" message: ("SDONXYZYYY MMDDHHMMSS") is encoded with additional Session/Transport Layer control characters (i.e. SDONXYZYYYMMDD HHMMSS + SOM, SDON,……EOM).

   The above session notifies the display command centre to wait for a response and ask the field transponders if there is anything to report.

   Next the source and destination address is added to the message (Note: It may not be added to the message depending on whether the display command centre message receipt flows or ask if there is anything to report). This process is identified as the "Data/Network Layer" This group of characters when added to the message enables the data packet transfer and defines the addressing of the fire alarm system. (e.g. add "SO Frame, SOM, SDON, SW Checksum, EOFrame" to the message)

3. The last layer in the data communication process is the **"Physical Layer**". The message and all of these framing/enveloping characters are encoded according to the electronic standard being used (in this case Differential Data Transmission System or RS-485 protocol)

The building wires carry the electrically encoded signal to the destination (e.g. Transponders or Display Command Centre) on two twisted wires at a specified speed or communication rate. In the near future this data may be transmitted via optical fibre.

This is a complicated piece of life safety equipment! It sounds to me that at any given point we are just a few key strokes from total system failure. Whatever the industry is paying the fire alarm technicians, it isn't enough. Programming is a major responsibility. Ensuring that each life safety data packet reaches its intended destination is paramount. In addition, the fire alarm technician must ensure that the program performs the tasks that it has been directed to do.

If the CPU speed is limited, then the time it takes for a bell or speaker to sound following an initiation is also limited. Wasn't that old system faster than the speed of light and now the new computer based equipment performance is based on CPU clock speeds? Number crunching and packet analysis prior to executing its task is also a speed reducing factor. Is three to five seconds ok from the point of initiation to audible signal? Or perhaps five to ten seconds? In the 1980's some of these new CPU based systems took over 15 seconds to initiate an alarm.

Now we have local release from the manual pull stations to mag-locked doors. This is another example of the dark side of speed! Processor speed and system performance effect the release time for the buildings' mag-locked doors. We know that with a set of contacts provided to drop the power to the mag-locked door locally, the operation will be instant. This is just like the antique fire alarm panel's operation!

What about linear heat detectors? Sorry, when a data communication link shorts, the system receives an invalid reply. Bells will not ring. Data communication links will be isolated. This is the bright side of speed!

Fire Alarm design and the Dark side of Speed

Have you ever thought about how much time it takes to design a replacement fire alarm system?

Sure, with computers, AutoCAD, automated spreadsheets, associated electronic reference material, even Codes on CD, it should be a cinch. What about cost? Is an 8% design fee reasonable? A "ten something" high rise office tower probably will cost $300,000 to retrofit with current CPU based technology. So that's a $24,000 design engineering cost.

By the time you factor in site audit, AutoCAD development, design briefs, specification development, and client meetings the five weeks of engineering time you budgeted for are exhausted.

So we look for efficiencies. Ways to increase the speed in which you produce the work. This is another example of the dark side of speed. Experienced administration staff, with a full and competent understanding of MS Office helps as well as an AutoCAD technician that can anticipate your direction and assist in correcting the obvious design issues. Budget constraints being what they are, the engineers must provide a design that ensures the life safety of the occupants and meet the bare minimum prescriptive Code requirements.

If this means going over budget and not meeting the client's deadlines then we pick the better design to ensure the life safety of the occupants.

Regardless of the dark side of speed, when it comes to system design, the life safety of the occupants including protecting them as best we can from the ravages of fire is paramount.

Fire Investigations from the Office of the Fire Marshal

This article has been provided by Steve Valk, a Fire Inspector for the Municipality of Clarington.

On November 23, 2005, Todd Clarke, the Fire Investigation Coordinator from the Office of the Fire Marshal (OFM) presented information on fire investigations from the perspective of the Office of the Fire Marshal and a discussion of preventable tragedies (including smoke alarms) to the Canadian Fire Safety Association (CFSA).

It is well known that the function of the OFM is to minimize the loss of life and property from fire in Ontario by providing:

- support to municipalities and fire departments across Ontario to meet the needs of their communities, including public education, fire prevention, firefighting, fire protection, training, and fire investigation,
- leadership within the Ontario Government by advising on standards and legislation relating to fire prevention and protection, and
- recommendations for the provision of adequate levels of fire safety for buildings and premises within Ontario.

The OFM operates 6 locations within Ontario including the Ontario Fire College which provides continual development and delivery of a variety of educational and training programs that will meet the needs of the fire services in Ontario. The head office is located in Toronto which supports the delivery of OFM services, and provides leadership and co-ordination to its regional offices. The regional offices deliver OFM services in the field. They are responsible for providing fire investigation, fire safety inspection, fire advisory, and fire department assist services at the local level. They also provide certain fire related training.

Fire Investigations

The Fire Protection and Prevention Act (FPPA) Section 14 gives the OFM Investigators the authority to enter on land or premises without warrant if a fire has occurred or if a fire is likely to occur due to substances or devices on the property. Section 9 is another area of the FPPA that is important to the investigator; it outlines the powers and duties of the Fire Marshal such as investigating the cause, origin, and circumstances of any fire or any explosion or condition that may have resulted in the loss of life and/or damage to property. Other legislated authority which is significant to the OFM Fire Investigators is derived from the Criminal Code of Canada for fire investigation purposes as well as the *Coroner's Act*.

The OFM currently consists of 5 Fire Protection Engineers and 24 Investigators throughout the province of Ontario. The OFM is responsible for conducting fire investigations under the following conditions:

- fatal fires and/or critical injuries,
- gaseous explosions,
- deliberate, malicious setting, or arson,
- large loss fires exceeding $500,000,
- unusual origins or circumstances & public concern, and
- Minister directed.

OFM Investigators have two response times depending on the nature of the investigation. A 24 hour response time is required for any fatal and/or serious injury cases or gaseous explosions. The day shift handles public interest, suspicious/incendiary, large loss, and Minister directed investigations.

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The OFM follows a system called the Comprehensive Fire Investigation which consists of 8 components to conduct their fire investigations. These components include:

- Fire Risk,
- Impact of Fire,
- Public Attitude,
- Fire Prevention Effectiveness,
- Intervention Time,
- Detection,
- Suppression Capabilities, and
- Fire Ground Effectiveness.

Scientific Method for Investigations

Investigators determining the cause and origin of fires follow a step by step scientific method. The first step is identifying the problem. The next step is to define the problem. Now the investigator can start to collect data and begin to analyze data (inductive reasoning). Once all of that is complete, a hypothesis must be developed, and tested (deductive reasoning). The investigator must now select his/her final hypothesis (determining cause).

For determining the cause of a fire and/or explosion, an investigator must utilize the process of elimination. Section 18 of NFPA 921 *"Guide for Fire and Explosion Investigations"* states that your findings must be "based upon evidence rather than the absence of evidence". Also that the point of origin must be a "clearly defined area of origin" and your ignition source is a "credible elimination of all other potential ignition sources". For example, even an 'obvious' incendiary fire must survive the challenge to the scientific method. In the case of absence of evidence NFPA 921 states "The elimination of all accidental causes to reach the conclusion that the fire was incendiary, can rarely be justified scientifically using only physical data".

NFPA 921 section 22 lists factors which may "be sufficient to establish cause, even though other factors such as ignition source can not be identified". Some of these factors include multiple fires, trailers, lack of fuel load, unusual fuel load or configuration, delay devices, burn injuries, ignitable liquids, sabotage of alarm systems, etc.

Current Pressures in Fire Investigations

We are always learning from mistakes made in the past. Case law is one of the areas that fire investigators must always keep in mind. Case law is reported decisions of appeals courts and other courts which make new interpretations of the law and, therefore, can be cited as precedents. There have been many cases thrown out of court because of negligent actions taken by investigators. It must always be kept in mind that findings from fire investigations could eventually end up in court, in the presence of lawyers, insurance companies, etc. All investigations must be conducted with the highest level of certainty and precision.

Working for the Fire Marshal's Office

Many people are interested in becoming OFM Investigators but there are other areas of the OFM which are not as glorified. In order to become a fire investigator with the OFM, an individual must have previous investigation/court experience, designation as a peace officer under the Criminal Code of Canada, and qualified as experts in various levels of court. Once hired, all OFM investigators complete an in-depth investigator training program.

Other areas of expertise in the Fire Marshal's Office include engineers with disciplines such as mechanical, electrical, and chemical who work closely with the investigators providing assistance when required. Fire protection technologists work closely with the engineers and investigators providing assistance on areas such as fire alarm, sprinkler and security systems. Fire testing personnel at the Ontario Fire College organize and conduct testing. Fire Modeling is the newest area for the OFM and using this technology assists the engineers, investigators and technologists in understanding how fires behave and allowing OFM personnel to see the impact of altering particulars without running full scale tests.

Teamwork

Teamwork is the ability to work together toward a common vision. The OFM understands that without teamwork the task at hand would not be completed. The individuals that work for the OFM rely on all of the resources that are available to them. The OFM resources include fellow investigators, engineers, and technologists. Outside agencies that the OFM relies on include fire department personnel, police officers, private consultants, heavy machine operators, works department personnel, technical agencies such as T.S.S.A., Ministry of Labour, etc.

Preventable Tragedies

The second half of the evening included highlights of actual cases where multiple residential fire fatalities occurred. After examining the details surrounding the cause of the fires, it all came back to the fact that none of the homes were equipped with working smoke alarms. The reality of the situation is that without working smoke alarms in the dwelling units the occupants were cheated out of precious time to escape the fire without harm. The OFM is seeing these types of situations occurring too frequently especially with the information being provided to the public through smoke alarm education campaigns. It is a fact that, like wearing seat belts, smoke alarms save lives. The OFM and Fire Departments have been trying to get that message out to the public about the importance of smoke alarms by providing literature, demonstrations, and actual facts about fire losses and fatalities.

The OFM is anticipating that with the new change to the Ontario Fire Code effective March 1st, 2006 which makes smoke alarms mandatory on each level of dwelling units, we will hopefully a drastic change in the presence of working smoke alarms. The OFM is taking a zero tolerance on the working smoke alarm policy and are encouraging fire departments to start fining individuals $235 for non-compliance. Fires will continue to occur but at least with working smoke alarms in our homes we are giving ourselves and our families a greater chance of survival.

Fire Protection of Steel Buildings

This article was provided by George Frater, Codes and Standards Engineer for the Canadian Steel Construction Council (CSCC).

On November 2, 2005 George Frater, Codes and Standards Engineer, Canadian Steel Construction Council (CSCC), presented the topic of Fire Protection of Steel Buildings.

The presentation started with an overview of fire testing as per CAN/ULC-S101-04 used to establish fire resistance ratings and was followed by a series of slides that summarized four fire protection methods used for steel buildings, namely:

1. Direct Applied Systems that insulate against heat such as spray-applied fire-resistive materials and intumescent coatings.
2. Membrane Systems that provide a thermal barrier against heat such as gypsum wallboard.
3. Water Systems that provide a cooling effect, i.e., water-filled hollow structural sections within steel structural frame dissipate heat of fire.
4. Concrete Systems where concrete encasing of steel or concrete-filling of hollow structural sections slows down the conduction of heat.

Additional background was given on fire protection by concrete-filling of hollow structural sections. A research program sponsored by the Steel Industry at the National Research Council of Canada (NRCC) led to design guidance in Appendix D of the National Building Code of Canada (NBCC). Three CSCC Fire Protection Bulletins summarize the outcome of this research and are available via the Canadian Institute for Steel Construction (CISC) website, www.cisc-icca.ca. The bulletins are as follows:

Fire Protection Bulletin No. 21: "Fire Resistance of Plain Concrete-Filled Hollow Structural Section Columns" outlines the test programme and presents the design equation developed at NRCC for exposed concentrically loaded round and square HSS columns. Includes design charts for 1 and 2 hr. fire resistance ratings.

Fire Protection Bulletin No. 25: "Fire Resistance of Bar-Reinforced Concrete-Filled Steel HSS Columns" outlines the test programme and simplified design equation for fire resistance ratings up to 3 hour for unprotected, concentrically loaded round and square concrete-filled HSS columns containing bar-reinforcement. Includes design charts for 1 and 2 hr. fire resistance ratings.

Fire Protection Bulletin No. 26: "Fire Resistance of Steel-Fibre Reinforced Concrete-Filled Steel HSS Columns" outlines the test programme and simplified design equation for fire resistance ratings up to 3 hour for unprotected, concentrically loaded round and square HSS columns filled with concrete mixed with steel fibres. Includes design charts for 1 and 2 hr. fire resistance ratings.

A brief presentation on fire protection of Lightweight Steel Framing (LSF) followed.

During 1994 to 2004 the Steel Industry participated in four consortium projects at NRCC that involved fire testing of numerous LSF wall and floor assemblies. Some of these fire-rated assemblies are within NBCC's, Appendix A. The Steel Industry has also prepared a guide to provide a reference for fire and sound rated lightweight steel framed assemblies. The purpose of this guide is to amalgamate fire and sound data for steel floor and wall assemblies that are relevant to residential and light commercial construction. Fire and sound data has been compiled from the following five sources:

- Underwriters' Laboratories of Canada, Toronto, Canada,
- National Research Council of Canada, Ottawa, Canada,
- Underwriters Laboratories Inc., Northbrook, Illinois, U.S.A.,
- Gypsum Association, Washington, D.C., U.S.A.,
- Factory Mutual Research, Johnston, Rhode Island, U.S.A.

The guide is available from the Steel Framing Alliance in Washington DC, and can be downloaded as a .pdf file through their website: www.steelframing.com.

The presentation continued with an overview of fire research conducted in Cardington, UK at facilities of the British Research Establishment. Within a former airship hangar building the real behaviour of an eight-storey steel building subject to real fires were investigated. Six fire tests were conducted in 1995 and 1996 where floors and columns were exposed to fire attack. In these tests the steel beams and deck, supporting a concrete floor slab, were unprotected and only the columns were fire protected. A later test in January 2003 looked at a fire in a compartment where columns and beam-column connections were fire protected. Attendees viewed video presentation of this test done in 2003 and an "office compartment" fire test from 1996. The latter video was also made available to attendees via a distributed CD. The outcome of this fire research has manifested itself in various projects in the UK where due to membrane action evidenced in fire tests less fire protection is necessary for floor beams and steel deck supporting a concrete slab. Such a project was illustrated from an informational fire safety publication of the International Iron Steel Institute (IISI) where a hospital building in Nuffield, UK used 40% less fire protection on steel beams supporting an unprotected steel deck and concrete slab.

Another six case examples of innovative fire safety in steel buildings were presented from the IISI publication. This publication can be ordered via IISI at no charge via the following webpage: http://www.worldsteel.org/bookshop/4 (click on "Fire Safety in Multi-storey Buildings").

The presentation concluded with an overview of a project where a Fire Protection Engineer used "design fires" to establish the acceptability of unprotected steel. Attendees received a summary of this project, expansion to the Nova Scotia Community College, as given in CISC's "Advantage Steel" magazine (No. 23, August 2005) that was also distributed to attendees. The article describing this project is entitled "Structural Fire Protection Determined Through Fire Protection Engineering Applications at Nova Scotia Community College" and can be downloaded via CISC's website as per the following link: http://www.cisc-icca.ca/content/ publications/publications.aspx (click on Issue No. 23).

Since this project used computer fire modelling mention was also made of a website providing a survey of fire and smoke computer models. Performance-based codes are now providing an opportunity for Fire Protection Engineers to apply engineered solutions and use advanced calculation techniques or in other words computer fire modeling. A useful website to overview the range of computer models in fire is via the following website: www.firemodelsurvey.com. The website lists 168 fire models in six categories such as fire endurance, egress, detector response, zone, field and miscellaneous. Further information can be obtained on most of the models via webpage links. The background to the survey is also available on the website in the form of two downloadable articles that were published in the Society of Fire Protection Engineering's Journal of Fire Protection Engineering, Vol. 4(3), 1992 and Vol. 13(2), 2003.

Mine Fires and Explosions

This information was obtained from the National Fire Protection Association (NFPA) website

Mining and mineral processing facilities represent significant fire and explosion exposures to both personnel and production equipment and buildings. From a personnel safety standpoint, underground mining has been by far the global loss leader in fatalities and injuries for all industries.

In the 100-year period from 1900 to 1999, more than 100,000 miners died from all unintentional-injury causes, including fires and explosions, in U.S. coal mine incidents alone, an average of 1,040 a year. In the last decade, this has been reduced to 450 fatalities, or an average of 45 per year. Approximately 10-15 percent can be attributed directly to fires and explosions.

Life-threatening incidents, though more common in coal mines, have also occurred in the non-coal (metal and nonmetal) mining industry. In the same 100-year period ending 1999, approximately 23,000 miners died in various incidents in non-coal mines, including fire and explosions. Recent advances in mining and safety technologies and the promulgation of more stringent government regulations have significantly reduced fatalities from underground mine fires and explosions.

For more information regarding mine fire and explosions, including a free downloadable report, visit www.nfpa.org.

NFPA and Canadian Standards Association

form alliance to enhance public safety

December 12, 2005 – The National Fire Protection Association (NFPA) and the Canadian Standards Association (CSA) have entered into a Memorandum of Understanding (MOU) designed to strengthen community and workplace safety.

The MOU was signed today by NFPA President James M. Shannon and CSA President, Standards, Pat Keindel at CSA headquarters in Toronto. Under the agreement, the organizations will work together to improve public safety and quality of life by promoting awareness, knowledge, and the application of standards and industry best practices in the community and workplace.

"We are pleased to have established a more formal relationship with CSA," said Shannon. "NFPA and CSA share a common interest in serving the public and providing a safe environment where we work and live. We look forward to expanding our activities with CSA in the areas of electrical and fire safety and the important area of emergency preparedness and homeland security."

"This newly established and historic alliance between NFPA and CSA is a statement of our shared common vision and interest in the betterment of public safety and the quality of life," said Keindel. "It is within the interest and the greater good of our two nations that we work together to build an effective model of international cooperation on public safety issues."

As a first step, the organizations have announced that NFPA has licensed CSA to use NFPA 1600, Standard on Disaster/Emergency Management and Business Continuity Programs as a base document for the development of a new voluntary Canadian National Standard for Emergency Management and Business Continuity Programs.

As part of the alliance, NFPA and CSA resolve to

- Establish a relationship to enable coordinated action to explore and pursue opportunities to undertake specific joint emergency preparedness, planning and emergency management, public health and safety, and public security initiatives.
- Create value for their stakeholders, constituents, members, and the general public in support of their common mandates.
- Build an effective model of regional cooperation for the common good.

Canadian Standards Association (CSA) is a membership association serving industry, government, consumers and other interested parties in Canada and the global marketplace. A leading developer of standards and codes, CSA aims to enhance public safety, improve quality of life, preserve the environment and facilitate trade.

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 consensus codes and standards, research, training and education.

Contact: Lisa Braxton, NFPA Public Affairs Office: +1-617-984-7275

Standard Method of Fire Tests of Firestop Systems CAN/ULC-S115

Underwriters' Laboratories of Canada announces the publication of the Third Edition of CAN/ULC-S115-05, Standard Method of Fire Tests of Firestop Systems.

This Standard will be of interest to those involved in research and development of building construction materials, fire protection experts, engineers and architects, as well as builders, manufacturers and regulatory officials.

This National Standard of Canada is applicable to firestop systems with or without penetrating items. These firestop systems are intended for use in openings in fire resistive wall and floor assemblies and membranes forming part of an assembly required to have a fire resistance rating and linear openings between adjacent fire resistive floor assemblies, wall assemblies or both.

Changes to this Standard include:

- An expanded scope that includes the evaluation of linear openings;
- Changes to furnace control temperatures and additional furnace temperature measurements for joint firestop systems;
- Changes to furnace differential pressure measurements;
- An introduction of a minimum positive pressure for all tests;
- New requirements for the hose stream test; and,
- A new Section 8 that specifies requirements for the evaluation of joint fire stop systems.

This National Standard can be ordered through ULC's ONLINE STORE, or our Publications Department at 1 866 937 3852, extension 61744, for more information.

Manual Stations for Fire Alarm Systems, Including Accessories CAN/ULC-S528-05, Second Edition

ULC is pleased to announce the publication of the Second Edition of CAN/ULC-S528-05, Manual Stations for Fire Alarm Systems, Including Accessories. This Standard has been approved by the ULC Committee on Fire Alarm Equipment and Systems, and is dated November 2005.

This Standard covers manual stations and their accessories for use in fire alarm systems. It also covers manual stations used for ancillary service, such as manual stations for the electrical release of extinguishing systems.

Some of the highlights of changes from the First edition are:

- The word "Pull" has been deleted for the more generic term "manual station" in the title and throughout the standard, as not all manual stations used on fire alarm systems are "pull" stations. The 2005 edition of the NBC has adopted this change.
- This standard recognizes the fact that technology allows for manual stations to be inseparably linked to their control unit and that those manual stations must be tested with the control unit.
- Manual stations are to be plainly and permanently marked with the words "FIRE" and/or "FEU" or an easily understood icon on the front of the manual station. A sample of the icon is included in the Appendix.
- In view of current technology, the sections on performance and construction have been revised for consistency with other ULC and UL standards.
- Introduction of requirements for protective covers and accessories for manual stations.

Please visit our online store to place an order for this standard.

Should you require any additional information, please contact Mahendra (Mike) Prasad at 416-757-5250 Ext. 61242 or Email: mahendra.prasad@ca.ul.com

Standard Method of Test for **Determination of Non-Combustibility in Building Materials CAN/ULC-S114**

Underwriters' Laboratories of Canada announces the publication of the Third Edition of CAN/ULC-S114-05, Standard Method of Test for Determination of Non-Combustibility in Building Materials.

This Standard provides a means of determining the non-combustible nature of elementary building materials. It shall be applied to materials used in the construction of buildings. It does not apply to materials with a decorative or protective coating, or impregnation, or built up laminations of dissimilar materials.

Changes to this Standard include:

- An added note to Clause 5.1(B) on the interpretation of flaming to clarify what constitutes 'no flaming';
- An added reference to ULC-S135, Standard Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter), in the list of referenced documents and as a note to Appendix A.

This National Standard can be ordered through ULC's ONLINE STORE, or call their Publications Department at 1-866-937-3852, extension 61744, for more information.

Editor: Janet O'Carroll

The CFSA Newsletter is published 4 times per year – June, September, December, March

New Advertising Rates

Membership has its benefits, and advertising is a key advantage to getting your company and product information out to other members in the industry. The CFSA has decided to make advertising in the CFSA Newsletter a definite advantage for members. Pricing has been revised to include the following rates:

	Member Rate	Non-Member Rate
Back Cover	250	500
Full Page	200	400
1/2 Page	100	200
1/4 Page	50	100
Business Cards	25	50

Prices listed are for each issue and do not include GST. Corporate members receive a 10% discount.

For more information regarding advertising in the CFSA Newsletter, please contact Sherry Denesha at 416.492.9417 or cfsa@taylorenterprises.com.

Closing dates for submissions are as follows:

Issue #1 – May 20
Issue #2 – Aug. 19
Issue #3 – Nov. 19
Issue #4 – Feb. 17

All general enquiries and advertising materials should be directed to the CFSA office at 2175 Sheppard Ave. E., Suite 310, Toronto, Ontario M2J 1W8

Your comments, suggestions and articles are welcome. Please send them to the attention of: The Editor
Canadian Fire Safety Association
2175 Sheppard Ave., E., Suite 310
Toronto, Ontario M2J 1W8

CFSA Chapters

Interested in forming a new chapter? Call CFSA at (416) 492-9417.

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Code Corner

Amendments to the Ontario Fire Code
Requires Smoke Alarms on Every Storey of a Home

On December 13, 2005, Monte Kwinter, Minister of Community Safety and Correctional Services, announced an amendment to the Ontario Fire Code to require working smoke alarms on every storey of every home. The Fire Code currently requires that smoke alarms be installed near all sleeping areas in a home. Ontario Regulation 650/05, which was filed on December 12, 2005, amends the Fire Code by adding the requirement that, effective March 1, 2006, smoke alarms must also be installed on each storey of a dwelling unit that does not contain a sleeping area.

The penalties for non-compliance of smoke alarm requirements remain the same:

- $235 fine (total payable) under Part 1 (Certificates of offence) of the *Provincial Offences Act;*

or

- a maximum $25,000 fine or up to one year in jail or both for individuals, and a maximum $50,000 fine for corporations, under Subsection 28.(3) of the *Fire Protection and Prevention Act, 1997.*

Given that the new requirements will not come into effect until March 1, 2006, fire departments have an excellent opportunity to increase public awareness of the new smoke alarm requirements in a positive and persuasive manner.

Enquiries about Ontario Regulation 650/05 and/or the media campaign should be directed to Janice Johnstone, OFM Program Specialist at (416) 325-3151 or to Carol Gravelle, OFM Public Relations Officer, at (416) 325-3138.

More information regarding the regulation can be obtained from the OFM website at www.ofm.gov.on.ca.

Seminars on Technical Changes in the 2005 National Construction Codes

The NRC's Institute for Research in Construction (IRC), in coordination with the provinces and territories, is offering technical seminars on the 2005 National Construction Codes, which started in December 2005 and extends until April 2006.

The seminars are being held in 16 cities across Canada, are designed to help code users familiarize themselves with the new code features and information. They will give an overview of the most significant technical changes in the 2005 National Building Code (NBC), National Fire Code (NFC) and National Plumbing Code (NPC), as well as a brief introduction to the new objective-based format.

Don't miss this unique opportunity to learn about the 2005 National Construction Codes from the source. Consider the benefits...

- Learn first-hand about new code features, including objectives, functional statements, and intent and application statements
- Gain a better understanding of the intent of the revisions to NBC Part 3: Fire Protection, Occupant Safety and Accessibility; Part 4: Structural Design; Part 5: Environmental Separation; Part 6: Heating, Ventilating and Air-conditioning; Part 9: Housing and Small Buildings; the National Fire Code; and the National Plumbing Code
- Discover how these improvements to the national codes, which serve as models for virtually all building, fire and plumbing regulations in Canada, can affect your work and business
- Take advantage of this networking opportunity to consult experts and exchange points of view with your colleagues
- Receive valuable reference materials, including seminar documentation.

The seminars will take place over two consecutive days in each city. Participants will have the option to register for the full two days, for one day or even for half-day sessions according to the topics that are of interest to them.

For more information on the seminars, schedule, program, education credits or to register visit the IRC website at http://www.national-codes.ca/seminars/index_e.shtml.

Smoke alarm safety and maintenance tips

The Toronto Fire Services offers the following tips when installing and maintaining smoke alarms in the home.

What you need to know
Most fatal fires happen at night when people are sleeping. A working smoke alarm will detect smoke and sound to alert you.

Protect your home with a smoke alarm
The Ontario Fire Code requires every home to have a working smoke alarm.

Choose the best alarm
There are many different types of smoke alarms to choose from. Smoke alarms can be electrically connected, battery-operated or both.

Install more than one
Install smoke alarms on every level of your home and near each sleeping area. Remember to replace alarms that are more than 10 years old. Smoke alarms don't last forever.

Where to install smoke alarms
Because smoke rises, it is recommended that you place the alarms on the ceiling. Avoid ceilings near bathrooms, heating appliances, windows and ceiling fans.

Test your alarm
Test your smoke alarms monthly by pressing the test button. You can also test your alarms by using smoke from a smoldering cotton string.

Replace batteries regularly
Install a new battery in each alarm once a year. When warning beeps sound, replace your battery immediately. Never wait. Change your batteries when you change your clocks' in the Spring and Fall.

Maintain alarms
Prevent dust from clogging your smoke alarms by gently vacuuming them with a soft brush every six months. Never vacuum electrically connected alarms unless you shut off the power. Test each unit when finished.

Prepare and practice
Draw a floor plan showing how you and your family would escape a fire in your home. Look for two ways out of each room and have a pre-arranged meeting place outside. Regularly practice with every member of your home. After everyone is outside, call 9-1-1 from a safe location.

When installing, testing, and maintaining smoke alarms, make sure you follow the manufacturer's instructions.

For more safety and fire prevention information visit the Toronto Fire Services website at www.toronto.ca/fire.

Welcome to the following New Members

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Simpson & Associates, Calgary, AB

CORPORATE

Bonpet Firesafety Systems
Onyx-Fire Protection Services
FCS Fire Consulting Services
Morrison Hershfield
Cafco Industries Inc.

INDIVIDUAL MEMBERS

Edward Dougall
Mark Peters

New NRC Publication

A new publication *"2005 National Construction Codes: increasing clarity and flexibility for design"* has been released (NRCC-48378)

Abstract:

The recent publication of the 2005 *National Building Code by the National Research Council* signals a new era in construction in Canada. First published in 1941, the highly regarded instrument of regulation has been retooled and reorganized into what is called an objective-based format.

The full version of the document can be obtained from the NRC website at http://irc.nrc-cnrc.gc.ca/fulltext/prac/nrcc48378/.

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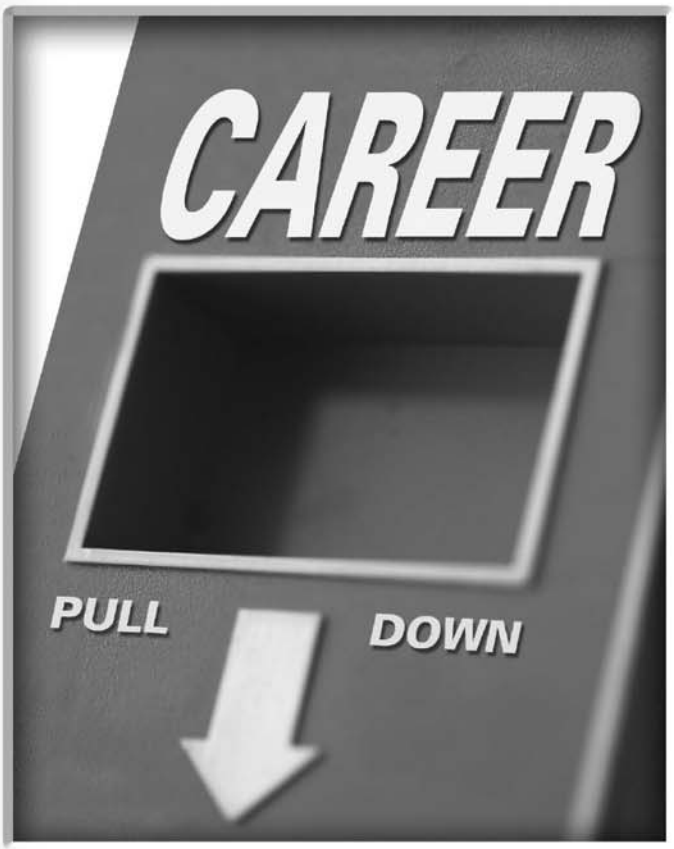

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CFSA Newsletter in **Electronic Format**

Since the introduction of the "Members Section" on the CFSA website, the CFSA Newsletter has been made available to all members in a downloadable electronic format.

Now all members who have registered an email address with CFSA will be receiving an electronic copy (PDF format) of the CFSA newsletter instead of a printed copy on a quarterly basis. Those members who have not registered an email address with the CFSA will continue to receive a printed copy of the CFSA Newsletter.

For those members who still wish to receive a printed copy of the newsletter, please fax the form below to (416) 491-1670 attention Mary Lou Murray.

Members who have yet to register an email address with the CFSA can do so by emailing us at cfsa@taylorenterprises.com.

☐ I wish to receive a printed copy of the CFSA Newsletter.

Name _____

Company Name _____

Address _____

Tel: _____ Fax: _____

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CFSA Membership Application Form

Why Corporate Membership?

Corporate Membership is cost effective because it allows any number of individuals from your organization to participate in the many functions provided by CFSA throughout the year. Any number of persons can attend our monthly dinner meetings/technical sessions or our annual conference at the preferred member's rate.

Basic Corporate

Includes 3 individual memberships; member's rate for all staff at dinner meetings, technical seminars and Annual Education Forum and Trade Show; Company recognition in each of the four issues of the CFSA Newsletter.

Class 4 Corporate

Same as Basic Corporate as well as one exhibit table at the Annual Education Forum and Trade Show and a Business Card advertisement in each of the four issues of the CFSA Newsletter.

Class 3 Corporate

Same as Basic Corporate as well as one exhibit table at the Annual Education Forum and Trade Show and a 1/4 page advertisement in each of the four issues of the CFSA Newsletter.

Class 2 Corporate

Same as Basic Corporate as well as one exhibit table at the Annual Education Forum and Trade Show and a 1/2 page advertisement in each of the four issues of the CFSA Newsletter.

Class 1 Corporate

Same as Basic Corporate as well as one exhibit table at the Annual Education Forum and Trade Show and a full page advertisement in each of the four issues of the CFSA Newsletter.

CFSA Application for Membership

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Please indicate how you first heard about CFSA: _____

_____

Please indicate in the appropriate box the category that best describes your vocation:

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- ○ Building Official
- ○ Insurance Industry
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_____

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Membership Fees

	Fee	+7% GST	Total
○ Class 4 Corporate	$ 625.00	$ 43.75	$ 668.75
○ Class 3 Corporate	$ 704.00	$ 49.28	$ 753.28
○ Class 2 Corporate	$ 867.00	$ 60.69	$ 927.69
○ Class 1 Corporate	$ 1,187.00	$ 83.09	$ 1,270.09
○ Basic Corporate	$ 347.00	$ 24.29	$ 371.29
○ Individual	$ 65.00	$ 4.55	$ 69.55
○ Student	$ 25.00	$ 1.75	$ 26.75
○ Associate	$ 25.00	$ 1.75	$ 26.75

Method of Payment:

❑ Cheque Enclosed $ _____

❑ VISA ❑ MasterCard ❑ AMEX

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Signature _____

Please return this completed form with membership fees to:

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2175 Sheppard Avenue East, Suite 310, Toronto, Ontario M2J 1W8
Telephone: (416) 492-9417 • Fax: (416) 491-1670
E-mail: cfsa@taylorenterprises.com • www.canadianfiresafety.com

CFSA Policy Statement

The Federal Government has introduced new privacy legislation effective January 1, 2004. CFSA respects your privacy and has included their privacy statement on the CFSA website at www.canadianfiresafety.com for your review.

CFSA does not share your information with any other organization. Paying your membership renewal with CFSA indicates that you wish to continue receiving Association information.

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Fortunately, compliance is easier and less costly than you think. Because new PyroCiC 2-hour fire-rated cable from Pyrotenax was specially designed to meet the survivability and installation requirements of NFPA 70 and NFPA 72.

Triple barrier. Triple protection. High-quality PyroCiC features an exclusive triple-barrier design — mica glass tape, silicone rubber insulation and a copper foil shield, all contained in a low-smoke, zero-halogen jacket. When installed in 3/4-inch EMT, it provides the 2-hour protection that shields critical fire alarm circuits from fire.

PyroCiC™ 2-hour fire-rated cable. Triple-barrier PyroCiC fire alarm cable meets the revised NFPA 72 survivability requirements, and makes installation and retrofit easy and economical.

Tremendous cost savings. Forget high-dollar renovations. PyroCiC allows both the initial run and the return loop to be installed in the same shaft. That means the cost of meeting the code — in new installations or retrofits — is a fraction of the cost of construction alternatives.

Quick, easy installation. Unlike cables with pressure-extruded jacketing, PyroCiC features a "tubed" jacket for fast, simple removal without damage to the insulation. Just score, break and remove. Color-coded — not merely labeled — wires help speed installation, too.

Don't wait. Don't risk the costs of noncompliance. Find out more about PyroCiC cable by calling 1-800-234-6501, e-mailing info@tycothermal.com or visiting www.tycothermal.com. It's a matter of code. It's a matter of conscience. It's a matter of time.

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