Monday, 13 June 2005

Welcome to Boston – and a very warm welcome indeed. The IT gremlin decided to try and disrupt the first sessions but inFIRE participants are made of stronger stuff. inFIRE Chairperson, Susan Walker welcomed all participants to Boston.

Harold S Moore from FM Global (our host) opened the conference. He managed to simulate the image of a BLEVE in black and white and colour. Once the PowerPoint presentation got going, Harry acknowledged the distance some participants had traveled and the involvement FM Global has with inFIRE. FM Global hosted inFIRE in 1993. As Harry is the Manager of Intellectual Property, he discussed the issue of fair use and copyright.

Keynote address Jeffrey S. Newman, AVP, Research Area Director, FM Global

The keynote address by Jeffery Newman (FM Global) who provided an overview of the work undertaken by FM Global. Focusing on the new research campus, he explained why research is important and provided some examples such as large warehouse type fires and the natural hazards laboratory for storms. At FM Global, all the research is for the insurance company but copies of videos and reports are lodged with their library. Information is released to the public by way of data sheets and operating standards.

Herding Cats to All Your Ducks in a Row ... the further adventures of Martha in E-journals Land. Martha Gunnarson, George C. Gordon Library, Worcester Polytechnic Institute

Martha Gunnarson (Worcester Polytechnic Institute) took us into E-journal land. With print journals you know where you are, e-journals are more challenging. With e-journals volumes are added or removed, often the subscriber gets more than they thought but it is in secret. Some titles will vanish completely or be transferred to another publisher. Martha provided some practical tips for managing e-journals. Place a dummy or a sign for each e-journal title on the shelf, create web pages with hot links to the on-line catalogue, and enter records for them in on-line union lists. Some changes with e-journals are not communicated very well, it is difficult to update records and their can be problems with ILL requests. E-publishers often don't want libraries to supply documents via ILL.

However help is at hand. There are some software solutions to help manage ejournals. Serials Solutions provides files and can be hosted by a 3rd party. There are problems with duplicate entries (different sources, variations in spelling). E-journal management is very reactive – which doesn't help the patron.

Ebsco Solution (www.ebsco.atoz). This is priced by the number of titles managed. Can amend or add titles, amend holdings, provide usage reports and also set the holding default to the Ebsco list and not your own library. Overall it saves your time updating the records. Link Finder Plus – lack of compatibility with various products, such as Ebsco or Serials Solutions. Tends to go in circles, back to the catalogue and journal list. Check out www.diglib.org in particular the Report of the DLF Initiative. Also LOCKSS – or Lots of Copies to Keep Stuff Safe http://www.diglib.org/preserve/stanfordfinal.html

In summary: keep an open mind (switch back to printed version); don't be afraid to admit failure; stay flexible, take risks; try new approaches; grovel. For further information contact Martha on mg@wpi.edu

A Survey to Support "Evidence-Based Practice" in Special Libraries Serving Fire Services Personnel and Researchers in Public Safety and Homeland Security Areas Lian Ruan, Illinois Fire Service Institute, University of Illinois at Urbana-Champaign

Lian Ruan (Illinois Fire Service Institute) presented the results of a survey to support Evidence-Based Practice in Special Libraries Serving Fire Services Personnel and Researchers in Public Safety and Homeland Security areas. This survey was intended to expand our knowledge and asks the question – do libraries add value?

Lian provided the background of the participating libraries (6 in all), how the questionnaire was developed and the timeframe of the survey (conducted over 16 months).

Basically firefighters have wider range of duties – it is not just fire fighting and can include emergency care. Details of the survey respondent's characteristics were provided, together with the importance of different information sources and how the libraries responded. There were some issues user confidentiality and how to boost the survey rate.

Overall the survey highlighted that users need to be aware of the library and the services provided. This work will form the basis for Lian achieving her PhD. For further information contact Lian on ruan@fsi.uiuc.edu

FABERC – Building the Foundation for the Digital Library in Fire and Building Education Collections Lora Brueck, George C. Gordon Library, Worcester Polytechnic Institute

Lora Brueck (Worcester Polytechnic Institute) presented a report on FABERC (Fire and Building Educational Research Collection). This is an online digital

library dedicated to collecting, categorizing, enhancing and distributing materials that will enlighten a broad audience for fire-related topics. Check out www.faberc.org

This will provide a resource gateway for the fire service community and a repository for collections of fire-related content. You can complete a survey that will assist the development of the content of the digital library. Check out the metadata links and controlled lists for metadata.

Photoelectric and Ionization Detectors - A Review of the Literature – Re-Visited Joseph M. Fleming, Deputy Chief, Boston Fire Department

Joseph Fleming (Boston Fire Department) provided a review of the literature related to photoelectric and ionization detectors. Joe discussed how he uses the information and included an historical overview of detector studies.

Interestingly in the US, 40% of people die in smoldering fires when the smoke alarms work. Other statistics such as a reduction in fire deaths could be attributed to an increase in burn care and a reduction in smoking. Joe likened ionizing detectors like seat belts whilst photoelectric detectors were lap belts with air bags.

Overall by switching from ionizing to photoelectric technology (or by developing a smoldering test that represents synthetic material) smoke detectors can finally realize their full potential and fire deaths can be reduced by hundreds of lives each year.

Joe is seeking any information that supports / contradicts his opinions. He can be contacted on jayf.dfd@ci.boston.ma.us

inFIRE Round Table

Information obtained from inFIRE members prior to the conference has been compiled and it will be published on the listserv. inFIRE attendees gave a brief report on their activities.

Tuesday, 14 June 2005

Tour of FM Global Research Campus

7:30 AM departure on the bus – we got off to a great start because no one was late!.

When we arrived at the FM Global Research Campus we were greeted at the Visitor Center with a continental breakfast, various forms of caffeine and a chance to wake up before the program began.

We viewed a short video on the dangers of static electricity while filling automobile fuel tanks and another demonstrating the difference between fire damage in a sprinklered and an unsprinklered dormitory room. The second video highlighted the testing done at the FM Global Research Campus. Dennis Anderson, Vice President, Engineering Application Training provided some background information about the Research Campus and the history of FM Global Testing facilities.

Then we donned hard hats and safety glasses and started off on a tour of several of the labs in the new facility. First stop was the Research Laboratory to view a combustible liquid atomized spray fire demonstration, learn about various testing techniques and view the standard plastic commodities displayed in the laboratory.

In the Multi-purpose Laboratory we viewed a comparison of two working sprinklers and saw a demonstration of a severe spark shower on welding blankets. This clearly showed that not all welding blankets can protect property in the same way.

Next we visited the floor of the large burn lab where Dennis provided an explanation of the construction of the lab and the tests we would view. We moved to the Visitors Gallery which overlooks the lab where we had an impressive view of a heptane pan fire and a free burn of plastic pallets under the 20 MW calorimeter. Some inFIRE members took some excellent photos of the tests.

A short walk outdoors brought us to the explosion bunker for a demonstration of the force that is created when only a small amount of dust ignites and explodes. Dennis also provided a detailed explanation for how to get the best photos and several people reported that they followed his instructions exactly and have great photos to prove it!

For the final part of the tour we boarded a bus which took us to the Natural Hazards Laboratory where we viewed a mechanically fastened roof sample uplift failure demonstration and a large missile debris cannon demonstration. Studying

roof uplift helps FM Global engineers determine what roof construction will withstand strong winds and thus prevent loss. Similarly, studying the damage caused by flying debris helps engineers determine how to protect property from such damage.

The tour ended with a short debriefing by Dennis and drawings for prizes. Several inFIRE members were the lucky recipients of various prizes such as mugs and hats. Wednesday, 15 June 2005

EDaFS: the Experiment Database for Fire Science Online Data Access for Experiments in Building and Fire Science John Woycheese, Assistant Professor in Fire Protection Engineering, Worcester Polytechnic Institute

> Dormitory Demonstration Fire Tests Benny G. Vincent, Senior Research Specialist, FM Global

Managing Incident Information Elizabeth Hides, Fire & Emergency Services Authority of Western Australia (FESA) Library

Victorian Police Library DVD Elizabeth Hides, Fire & Emergency Services Authority of Western Australia (FESA) Library

Do You Read Me? Overcoming Literacy Barriers to Fire Safety Meri-K Appy, President, Home Safety Council

Librarians and Document Management Systems: a Collaborative Presentation of the Benefits and Challenges of the Library's Participation in Organization-wide Systems Susan Walker, Fire Protection Publications, Oklahoma State University Laura M. Logan, MLIS, Information Specialist, Safety Engineering Laboratories, Inc.

Thursday, 16 June 2005

Welcome from NFPA James M. Shannon, President and Chief Executive Officer, NFPA

Arrived at NFPA to morning coffee & pastries. Introduction - Libraries are changing more recently than ever have in the past. The Library at NFPA may be the first stop for a fire researcher.

Human Behavior in Fires with film from WTC and the Station fire Rita Fahy, Manager, Fire Data Bases and Systems, NFPA

Databases and systems related to human behavior in fires. Research comes internationally Australia, Canada and events in the USA.

- There is data on a decision to start to evacuate and travel times
- Little data on evacuee decision making
- Evacuation studies
- NRCC Data on drills in apartment buildings, offices, apartment fires
- Victoria Australia post fire interviews and reaction to smoke alarms
- Ulster Northern Ireland Drills and experiments focus mobility impairments

Human Behaviors in Fires

- Lab experiments indicate travel time increase for different types of surfaces for mobile challenged
- Videotaped observations utilized
- Interviews post fire for evacuees
- Security cameras pick up precise observations

Example 1: Fire alarm goes off in a supermarket

- New arrival will tend wander a little, may start to shop and then leave
- 1 ½ hours into shopping shoppers will tend to exit after ignoring for a short time
- In line at cash register will tend to stay or refuse to leave

Example 2: Fire alarm goes off at a restaurant

- Ate but have not paid bill will tend to leave quickly
- Just got food may refuse to leave

So Evacuation Studies suggest that familiarity – how well do you know the space? People form bonds – leisure centers – parents find kids, your role in the situation – in line at cash register, new arrival has an affect. Hotel guests tend to determine how the firefighter is behaving? Also, age and mobility play a large role. Occupancy characteristics by time of day and venue - hockey game or figure skating or show in the same arena will have different evacuation times.

Evacuation time:

• Based on notification, reaction time, pre-evacuation time and travel time (path, distance and speed).

Action categories:

• Investigate, seek information, alert others, and seek refuge.

Case studies:

Apartment Buildings – can have different evacuation times based on alarm level of quality
3 minutes – good alarm
9 minutes – bad alarm
Winter – will take a long time to evacuate

Word Trade Center (WTC) 2001

- People above impact floors could not escape
- Media accounts helped evacuation
- Appendix in NIST Report Project 7 1B Draft recommendations out later this month
- CDC study on deaths, below impacts 75-77 deaths
- CDC study on code changes
- UK study began in 2004

WTC Occupancy – 5000 to 7000 people there. $^{1\!\!/}_{4}$ of all due to Elections and $^{1\!\!/}_{2}$ school day

Tower #1 – no upper floor survivors

Tower #2 – six above 78th floor survive

Tower #1

- 1 hour 42 minutes to evacuate
- Crowding floor 30

Tower #2

- 1 hour 12 minutes
- Crowding floor 50

Initial cues – fire alarm, building shook, flames, jet fuel smell assisted evacuation decision.

1993 Event

- Car bomb, emergency communication, backup electricity knocked out
- Blackout in stairwells
- Evacuation took hours darkness
- Stairwell dead end, stairs had different number of treads
- People counted and shouted up number of stairs and turns

• Cross-over shafts at floors 41st, 48th, 76th

1993 cues ambiguous - transformer explosion was thought the cause

- Stairwells smoky and dark
- Evacuation time was 6 hours in 1993, and 1hour 42 minutes on 9/11

Due to 1993 Event on 9/11:

- Safety in high-rise buildings perception changed
- Photo luminescent paint and signs helped out on stair treads, handrails

 calming effect

Night Club Fire – Great White Band – February – Warwick, Rhode Island

- TV reporter videotaping
- Video tape evidence no panic
- All evacuees interviewed by police
- Video shows
 - Commitment show special effects looked cool at first did not know it was not intended
 - Slow recognition of initial cues
 - Orderly evacuation
 - Preference for familiar exit

Nightclub – NFPA Code Changes

- Sprinkler new clubs
- Sprinkler occupancy greater than 100
- Restrictions with occupancy greater than 250
- Use of Crowd Managers

Panic – myth or reality?

- Panic kills is the basic assumption of human behavior in fires but there is no panic it exists only in the news stories and catchy headlines
- Voice messages have a calming effect
- PEOPLE DON'T PANIC
- LaSalle Hotel in 1946 had an orderly evacuation while it was burning to the ground

Observations on human behavior

- Little reaction to smoke
- Fear of flame but not smoke
- Need for second or third cues
- Varying reactions to fire wardens

Need to study

- Effects of population characteristics
- Physical limitations

• Aging population

Behavior modification

- Pre-movement time
- Decision to evacuate or not
- Information before a fire
- Follow-up after fire
- Information during fire
- Alarm audibility
- Voice message audibility
- Elevator use

Evacuation videotapes

• Security tapes time and again indicate – there is no panic.

Recent research from the Foundation

Kathleen H. Almand, P.E., Executive Director, The Fire Protection Research Foundation

NFPA

- Since October 2004
- National Research Foundation
- 1982 support NFPA Mission
 - Hold symposium detect and alarm
 - No peer review, no proceedings
 - Research agenda setting
 - Projects literature, major fire testing
- Research programs
 - NFPA library web site soon
- Resource to technical committees
 - No funding or resources
- Research process
 - Technical Advisory Committee
 - Research/testing
 - Publish report public only
- Fire Detection Alarm Research Council
 - Mission
 - Activities
- Developing Research
 - Human behavior studies
 - Roadway tunnels
 - Ceilings
 - Visual Signaling
 - Smoke and heat alarms
- Fire Suppression

inFIRE Conference 2005

- Database test reports Tyco
- Hazmats
- NFPA 2001 studies enclosure loads
 - Need sprinkler testing reports on loading

Emerging Issues

- New materials and systems
 - Security
 - Alternative vehicles
 - Aging population
- Roadway tunnel Fires NRCC
 - Boston detection went off after fire department arrived
 - Project plan to determine what, how, why
- Sponsors to come

Hydrogen Economy

- New Vehicles
- 1/25/04 Talked about research needs for X
 - Assemble information stationary fuel cell; refueling stations
 - Model for separation
 - 12 stations in California already
 - Cell phones use stationary fuel cells

Sue Marsh – Charles S. Morgan Library - digitizing old NFPA codes

- Contractor Input Solutions Gaithersburg, MD
- Formulas and graphs OCR can change character
- ROP's and ROC's will be done next

Fire investigations, what goes into them, what do you look for, with some examples of real fires

Robert Duval, New England Regional Manager/Sr. Fire Investigator, NFPA

Notification

Wire services, word of mouth, network, relations with response 24 hours for domestic

Criteria

Fatalities, large losses, request, significant fire, codes issue.

Resources

Investigator, engineer, staff, analysis, library

Report

Client report review, not expert witness – no origin/cause determination, electronic format, summary presented by alerts, Internet, presentations *Teamwork*

State and local authorities, ATF, fire academies, arson investigative team

Fire Investigation Examples

- Florida tornados 2/98
- Bulk retail/store Tempe AZ 3/98
- Propane explosion, Albert City FL 4/9/98
- Grain elevator, Haysville KS 6/8/98
- Cruise ship, Miami, FL 7/98
- Bus, MS, 8/98
- Dance Hall, Guttenberg, Sweden, 10/98
- High Rise, NYC 12/98

Statistical reports compiled at NFPA using NFIRS raw data and the One-Shop-Data Shop document delivery/customer service function Marty Ahrens, Manager, Fire Analysis Services, NFPA Nancy Schwartz, Administrator, One-Stop Data Shop, NFPA