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Society of Fire Protection Engineers

New Jersey Chapter

FUSIBLE LINK

JANUARY 2006

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Message from Chapter President...

The Year 2005 was a very good year for the Chapter highlighted by our bus trip to the FM Global Research Campus in RI. We have very good and interesting programs planed for the remainder of our Chapter year in 2006. We will be holding the annual Golf Outing this year on Monday June 26th at the beautiful West Point Military Academy so mark your calendars now. Flyers and more details to follow later in the year. For the January 9th meeting Ken Ismann will give us an overview of NFPA 20 - Fire Pumps and the recent changes that have been incorporated. This is a presentation for designers, installers, users and those who evaluate systems and should not be missed.

Our Chapter is a very dynamic organization. My term as President ends this coming June. That means our Vice Presidents move up to higher offices resulting in a vacancy or two in some of the Chapter officer positions. To keep the Chapter strong and diverse we need some new blood. If anyone is interested in participating and joining the Chapter officer ranks, please contact Sarge Slicer at 973-993-5947. No experience necessary.

Happy New Year to all and let's see everyone at the next meeting.

Rich Reitberger
Chapter President

NJ SFPE Membership Meeting Minutes December 5, 2005

The meeting was called to order at 6:10 by Rich Reitberger our President. Introductions followed the salute to the flag as is our custom.

The November minutes were approved as published in the Fusible Link. The treasurer's report for December was read and accepted.

We had no applications for membership tonight.

Chuck Gandy spoke to the membership about question writing for the P.E.'s exam, he informed us that the National SFPE relies on the chapters for this. Chuck asked all members that are Licensed Professional Engineers to attend a question writing session that will take place at FM Global in Parsippany on Thursday, December 29. The session will last all day beginning at 9:00 AM and will be supported by Chris Jelenewicz, P.E. National Engineering Program Manager for the SFPE. A luncheon will be provided.

Tonight's presentation was "Integration of Mass Notification in NFPA 72" by Ray Grill, P.E., FSFPE. Ray, formally of RJA, is now the Associate Principal and Fire Business Area Leader, Americas of ArupFire and the President Elect of the National SFPE.

Ray started by defining Mass Notification as "A system used to provide information and instructions to people, in a building, area site, or other space." He explained that a mass notification system may use inteIligible voice communications, visible signals, text, graphics, tactile or other communications methods. He further explained that the purpose of a mass notification system was to Initiate evacuation, relocation, or to provide information to occupants. This information may concern fire emergencies, weather emergencies, terrorist events, biological, chemical or nuclear emergencies or any combination of these.

Ray went on to tell us that the system may be automatic, manual, or both, it could be a single on-site location or it might include multiple command locations and multiple building locations. The systems may be wired, wireless or any combination of the two, they may also be called wide area notification systems when they provided information external to the building or buildings.

Ray spoke from his experience on the NFPA 72 Technical Correlating Committee or TCC and provided us with great insight to the roots of mass notification and its incorporation into NFPA 72. Shortly after September 11, 2001 the Department of Defense (DoD) realized the need for a change in standard operating procedures as they pertained to building evacuation, they developed DoD Minimum Antiterrorism Standards for Buildings (with over five occupants) in July 2002 which was published as the Unified Facilities Criteria (UFC) 4-010-01 Design. In December 2002 the document was updated as the UFC 4-021-01 Design and Operation & Maintenance of Mass Notification Systems. These documents addressed the threats from terrorism that could make general building evacuation play in to the hands of those wishing to do harm.

In June of 2003 the Air Force Civil Engineering Support Agency petitioned NFPA to develop a standard for Mass Notification. The next step was for the NFPA 72 or "The National Fire Alarm Code" (NFAC) TCC, of which Ray was the chair, to review this request. A Task Group was formed in February 2004 and meetings were held in March, May, and August of 2004.

The TCC realized that to accommodate the DoD and Air Force's requests, modifications would have to be made to the individual chapters of the NFAC in order to allow for the use of fire alarm systems for mass notification on their own or integrated with other systems. The TCC also felt that a new appendix, or as they are called today an annex, would be needed to provide guidance for the application, installation, location, performance, actuation, control and maintenance of mass notification systems would have to be added.

The new Annex (G) was laid out much like the body of the NFAC in that Chapter 1 would contain the introduction, Chapter 2 the fundamentals, Chapter 3 the system features, Chapter 4 the central control station requirements. Each of the chapters would be referenced in the body of the NFAC.

Changes were made in the body of the NFAC with new verbiage, definitions and in some locations simply place holders for future use at which time information from the annex can be moved into the body of the standard.

In Chapter 3 (Definitions) along with new definitions some of the existing ones were changed to allow them to also apply to mass notification as well as fire alarm. References to Annex G were added to Chapters 4 (Fundamentals) and 5 (Initiating Devices). Chapter 6 (Protected Premises) has had many additions as well as modifications to allow fire alarm systems to be used for mass notification. Chapter 7 (Notification Appliances) has seen the largest amount of change with text revisions throughout to address devices utilized for mass notification as well as fire alarm. Along with the revisions new text has been added to allow common appliances to be used as well as different or separate appliances to be differentiated. Chapters 8 (Supervising Stations), 9 (Public Fire Alarm Reporting) and 11 (Household) simply have references to Annex G.

After a short Q & A session the meeting was adjourned at 8:20.

Career Opportunities...

Project Manager
Fire Protection Engineering

Job Reference Code:
23-MH318

Location:
Duluth, Georgia (Metro-Atlanta)

Relocation:
A relocation package will be provided for the selected candidate.

Description:
Take full responsibility for all aspects of each project. The first objective is to deliver exceptional value to the client, exceeding his/her own expectations. The second objective is to manage the project responsibly and profitably. Position does not require sales to new clients.

Basic Qualifications:
Ready to assume project management and senior fire protection engineering duties for a variety of fire protection engineering and consulting projects including fire hazard analysis, fire system design, code analysis, etc. Strong desire to engineer innovative solutions to complex fire protection or code compliance problems using a team approach. Ready for a higher level of responsibility and compensation.

P.E. in fire protection engineering preferred. BS degree in fire protection engineering or traditional engineering disciplines important. Consulting engineering and project management experience essential. Total of 5 to 10 years of varied work experience is ideal. Experience in Property Loss Control Engineering a plus.

Career Opportunity:
Harrington Group, Inc. was founded in 1986 in Atlanta. We enjoy a national reputation for honest hard work, creative solutions, and exceptional value delivered to our clients. We are well managed and profitable. We are currently growing and demand for our services is high. Our 5-year plan includes continued strong growth, which will provide opportunities for our associates to grow in responsibility and compensation.

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We are seeking qualified candidates with a Bachelor of Science degree in Fire Protection Engineering, or equivalent plus 3 to 5 years of applied fire protection program experience in a nuclear power plant environment.

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Risk Engineering Property Consultant - Zurich

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Position Location: New York, New Jersey area
Position ID: 9647

We are seeking a Risk Engineering Property Consultant with the following skills: Under limited management and technical direction, provides advanced level risk assessment and intermediate risk improvement services for customers and business partners; provides basic level training for customers, service design and coordination, mentoring, marketing, and loss investigations.

Qualified Candidates will possess: Bachelors Degree or equivalent; three or more years of experience evaluating property for associated risk and exposures; predominantly field position, surveying account locations in the NJ-NY area, with some minor account coordination; solid knowledge of highly protected risk market; demonstrated proficiency related to PC and software applications; history of working successfully in a team environment; high level of knowledge regarding exposures and controls; advanced level of knowledge within industry segment

This position is also eligible for a company car.

We can offer you competitive compensation, training and career development opportunities. If you are looking for a world class, forward thinking team environment that provides you with the tools to achieve your goals, visit our Career Center at www.zurichna.com and search for Position ID # 9647. All qualifying candidates will be subject to a complete background check. An EEO/AA Employer, in North America, Zurich supports a diverse workforce.

Cable Fires In Hidden Voids - New Dangers Discovered

Coldwell R., Fardell P.J., Hoare D. Chitty R.

Fire Research Station, Building Research Establishment Ltd.

This is the third installment of a technical article from the Fire Protection Research Foundation from the symposium dated June 28-30, 2000

3.3 Real-scale, scenario-based fire tests

The real-scale cable fire test facility at BRE Cardington is 7.8m x 6.1m x 6.1m x 4m high and was used to represent an office containing a fire below a suspended ceiling with a missing ceiling tile ("breach") directly above the fire. 7m lengths of cable (normally 200 lengths) were mounted on a "adder" - style support and installed horizontally in the centre of the 1.0 m deep plenum space above the suspended ceiling. Flames from a 1.0MW methane gas burner impinged on the underside of the cable sample, for a period of 2,700 seconds (45 minutes). To simulate a heating ventilating and air-conditioning (HVAC) role for the plenum space, a fan, duct and damper system was installed to provide a variable air extract. Tests were also performed during which the HVAC system was switched off, leaving only natural ventilation around the facility. The test rig was comprehensively instrumented to provide a detailed picture of the thermal environment in the lower "office" fire chamber, the plenum space and the fan/duct extract system. The following measurements were recorded in most tests:

- Temperatures in the lower fire chamber, int he plemun space and in the extract duct.
- Carbon dioxide, carbon monoxide and oxygen concentrations in the plenum space.
- Carbon dioxide, carbon monoxide and oxygen concentrations the extract duct.
- Smoke optical density and flow rates in the extract duct.
- Mass-loss of the burning cable with time (to provide a measure of heat output).
- Full video and stills photography coverage of the fire development inside the plenum space including infra-red imaging equipment (to enable fire spread to be observed through thick smoke).

An assessment of the fire performance of 4 pair and 25 pair cables was undertaken for three generic types of cable, based on their classification in existing international standard fire tests. Of particular interest were the five main-reaction-to fire parameters, as described in the Euroclass classifications, these being:

- Time to ignition,
- rate of heat release,
- rate of smoke production,
- rate of flame spread,
- generation of flaming droplets/ debris

3.4 Numerical Modeling

A zone model to predict temperatures in the experimental plenum facility was developed and a simple cable fire spread model has been included in the Computational Fluid Dynamics (CFD) model JASMINE. These were validated with reference to the large-scale fire tests and allow predictions to be made of the behavior of cables in alternative scenarios. The fire spread model is based on an empirical approach using data acquired in the small-scale studies to characterize the properties of the cables.

3.5 Intermediate-scale standard fire tests

Cables studied in the PIT program were generally of three types classified according to the "pass/fail" rating in three standard tests. These tests and some key operating parameters are shown in the table below.

It is clear from the table that there is a hierarchy in the three test methods in terms of the severity of the heat source, the numbers of cables used in each test and the examination of the cables' performance using the pass/ fail criteria. Therefore it would be expected, for example, that a cable which passes the most severe test should perform well under a range of fire tests. In order to establish the suitability of these internationally

Test	Heat Source	Heat Intensity	Sample Orientation	Cable Numbers Used in Test	Pass/Fail Criteria
IEC60332-1	Burner Flame	Light	Vertical	Single	Charring[1]
IEC60332-3	20 kW	Moderate	Vertical	Multiple (Bunched)	Charring[1], [2]
NFPA 262	88 kW	Severe	Horizontal	Multiple (Single layer)	Smoke & Flame spread[2]

1 Smoke classification by IEC 61034

2 Rate of heat release can be measured on modified apparatus, but currently it is not called for in the test procedure.

recognized cable fire tests in representing a real scenario, two Standard cable test facilities were commissioned for the PIT study, these were:

- The 'Steiner tunnel' which is used to rate cables in the USA and Asia Pacific countries as the Underwriters Laboratories (UL) 910 test and the National Fire Protection Association (NFPA) 262 test used for use of cable in ventilated concealed spaces and,
- The IEC 60332-3 test on bunched wires or cables used extensively within Europe to classifiy cable fire resistance.

The results from these two facilities have been compared with those from the large-scale plenum cable fire tests, for identical cable fire tests, for identical cable. Both these and other Standard fire test methods are available at FRS for commercial testing.

4. Results

4.1 Cable Installation Surveys

General observations from the surveys showed:

- Voids depths up to 1.5 m.
- Voids filled to capacity
- Voids commonly contain a mixture of power, telephone, data and emergency systems cabling.
- Numerous generations of operations and obsolete cables
- The cables meet a wide range of fire performance tests - often in the same void
- Voids are sometimes ventilated with a forced air flow system especially as cooling for computer rooms and/or HVAC.
- Suspended ceilings are often perforated by cracked or missing tiles or they have been displaced for maintenance
- Fire stops have not been replaced or poorly repaired after additional cable installation

The generic communication cable types identified in the surveys included:

- 4 pair and 25 pair cables
- Copper and fibre optic cables
- Halogenated and non-halogenated cables
- IEC 60332-1 and IEC 60332-3 cable types

These cable types were therefore incorporated into the small and real-scale test programs and formed the basis for the computer model loadings and void designs. It was considered that the BRE/FRS plenum test rig was a good representation of a practical building scenario. The surveys have also shown that the potential fire loads in these buildings can be large. Studies in the USA and NIST[3] have shown that a typical office fire can generate in excess of 3 MW. Consequently, the scenario stuides in the Cardington test rig was therefore considered both realistic and of moderate severity.

To be continued in the February 2006 issue of the Fusible Link.

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Meeting Dates/Program 2005-2006

(Programs Subject to Change)
Watch web page concerning cancellation In case of possible inclement weather conditions

Jan. 9	Changes to NFPA 20 - Fire Pump Standard - Presentation by Ken Isman
Feb. 6	Egress Modeling discussion and sofware presentation - Ed Arm, RJA
March 6	Combustible Dusts - Demonstration of deflagration in explosion apparatus - John Cholin, JM Cholin Associates
April 3	Foam Protection & the environment
May 1	Tyco Trailer Demonstration
June 12	Annual Meeting/Losses - Mike Newman, Johnson & Johnson, John Cholin, JM Cholin Associates
June 26	Joint NY & NJ Golf Scholarship Outing - West Point, NY

POSITIONS TAKEN BY SPEAKERS ARE NOT NECESSARILY THE POSITION OF THE NJ S.F.P.E.

All meetings are held at the Hanover Manor, Eagle Rock Road, Hanover, NJ (approximately 1½ miles west of Eisenhower Parkway). Get Acquainted Hour 5:00-6:00 p.m. Adjournment is usually before 8:30 p.m. The Executive Committee meets at 4:00 p.m.

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MEETING NOTICE

Date: January 9, 2005

Place: Hanover Manor
16 Eagle Rock Avenue
East Hanover, NJ

Price: In Advance - $22 At door - $25

Dinner: 5:00-6:00 (Cash bar for mixed drinks)
Dinner at 6 PM

Speaker(s): Ken Isman

Topic: Changes to NFPA 20 Fire Pump Standard

Please note for this meeting:
All officers, directors and committee chairman are requested to attend a meeting at 4:00 p.m. at the Hanover Manor.

PLEASE COMPLETE AND RETURN WITH YOUR CHECK PAYABLE TO "SFPE NJ CHAPTER" TO:

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COMPANY:_____TELEPHONE:_____

ALL RESERVATIONS SHOULD BE RECEIVED BY FRIDAY, JANUARY 6, 2005. TELEPHONE RESERVATIONS OR CANCELLATIONS SHOULD BE RECEIVED BY NOON OF THE MEETING DAY.

Fusible Link Editors NJSFPE
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