

Flashpoint

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JANUARY 2016

PHILA - DELAWARE VALLEY SFPE



January Meeting Notice

Special points of interest:

- *If you haven't paid your dues, please send them to John Spitz. The form is on our website..*

Date: Tuesday January 12, 2016

Place: Jacobs Engineering Group Three Tower Bridge Suite 3000 Conshohocken, PA

See Page 6 for directions

5:30 PM: Fellowship Time

6:00 PM: Dinner

Dinner Program:

Our January Meeting technical presentation topic will be:

“Fire Protection for Enclosed High-Voltage Switchgear Equipment”

It will be presented by Jerry Forstater, PE, PSP

Jerry is CEO, COO, and Chief Engi-

neer for Professional Systems Engineering, which provides engineering, planning, design and construction services for fire safety, security, acoustics, and related building systems. Jerry is a member of the Board of Directors for our Chapter.

Don't forget to make your reservation by Friday January 8th; and bring an associate from your company!

Cost: \$25.00 for dinner & program

Reservations: By 12 noon, Friday, January 8, 2016

Reserve with:

Lou Annas by E-mail:

lannas@bearindustries.com

or Fax: (302) 368-9217

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Future Cities Competition

The competition is close! The date is Saturday January 23, 2016 at Archbishop Carroll High School 211 Matson Ford Road, Wayne, PA 19087. The need at this point is people on the day of the event to help setup, judge and help with what ever needs to be done that day. If you want to help, please go to www.futurecityphilly.org and click on the volunteer opportunity button.

Our chapter sponsors an award for fire protection along with John Kampmeyer and Triad Fire Protection Engineering. For more information, contact John Kampmeyer (jkamppe@verizon.net)

or Rick Coppola (rcoppola@oliverfps.com).



FLASHPOINT

"The purpose of FLASHPOINT is to provide a forum for the transfer of information between members of the Philadelphia-Delaware Valley Chapter of the Society of Fire Protection Engineers (SFPE) and to give the Chapter visibility."

Newsletter/Publicity Committee:

Jay Stough

Information for publication can be submitted to: **Jay Stough**

Email: jays@tilleyfire.com

This Newsletter is published 9 or 10 times/year (September through June) and received as part of membership of the Chapter. Membership Dues are \$30.00 collected annually in the Fall of the Year. For an Application of Membership contact: **Lou Annas**
lannas@bearindustries.com

Visit our web site at:
www.sfpphiladelphia.org

Articles written are the views of the Author and not necessarily those of the Philadelphia-Delaware Valley Chapter of SFPE. ❖

President's Spark by Bob Moser PE

We had a wonderful presentation by John Kampmeyer Sr. at Jacobs. John filled us in on the challenges that a State Body has in adopting new building and fire codes. We were a tad space deprived for the meeting since Jacobs has been going through renovations and the main large conference room was unavailable. We used a much smaller conference room, but it appeared to work fine. We served finger foods rather than our typical hot plates since not all had a table to sit at. I am assured by our Jacobs friends that the main conference room will be ready for our next meeting in January. I hope everyone is having a nice holiday season. Hard to believe for me that 2016 approaches us so soon. It appears that 2016 will be another exciting year for the SFPE as Jeff LaSalle has some great speakers on the agenda for us. I would like to thank everyone for their support of the SFPE since our attendance during our meetings in 2015 have been spectacular. Happy holidays to all and be safe! See you all in 2016.

Bob

Engineers' Club of Philadelphia

Luncheon

Delaware Valley Engineers Week kicks off with the Awards Luncheon the Friday before the official Engineers Week at the Double Tree Hotel, Broad & Locust in Phila. Formal festivities get underway with the Student Paper Poster Session and Reception, featuring a cash bar, beginning at 11:00 AM on Friday February 19, 2016. This is an opportunity to meet the award recipients, talk to the students about their papers, and network with your fellow engineers.

Following lunch, we present the various DVEW awards. The Engineer of the Year and the Young Engineer of the Year are formally introduced and make brief remarks to kick off the celebration of Engineers Week in the Delaware Valley.

We also recognize award recipients (member of the year / project of the year, etc.) who have been honored the past year by the various engineering and technical societies.

Celebration of Engineering Reception

The concluding event of Delaware Valley Engineers Week is the Celebration of Engineering Reception held on Thursday February 25, 2016 (location TBA). It is an evening of socializing and honoring this year's major award recipients. This social/networking event to celebrate engineering includes:

- Cocktails, heavy appetizer stations, and dessert stations
- Award recipients will be honored with posters, exhibits and running PowerPoint presentations in the networking area.

Future City Competition Regional winners will display their first place model. The Engineer of the Year and Young Engineer of the Year will provide brief remarks, followed by a brief recognition of the Hall of Fame inductees and Outstanding Service Award Recipients.

Fire Protection of High Power Switchgear in a Building

The question is: “How do you protect a building housing a pair of redundant switchgear which are connected to high capacity transformers?” The answer is as complicated as one could expect. Of course, the path to that answer starts by defining the problem, continues with thorough investigation of the code recommendations and possible solutions, and concludes with an analysis of the options.

The problem is a redundant pair of switchgear contained within a building. The switchgears are housed in metal clad enclosures with NEMA 3R rating, have air gap circuit breakers, and have no mineral oil potting in any of the bases of any of the enclosures. The switchgear enclosures have a degree of protection from solid foreign object ingress and environmental water ingress, though not entirely air tight. The enclosure assembly provides a weather-resistant structure that makes detection, monitoring, and suppression significantly more difficult to achieve. The substation location serves as the main distribution for a mission critical campus, which makes the location a high priority risk with regard to business interruption and business continuity.

Panelboards and switchgear at the higher voltage levels are still prone to loose connections, breakdown, age deterioration, environmental contaminants, oxidation/corrosion, and other anomalies associated with the higher currents traveling through the busbar and connections.

These elements combine to create the potential for elements to arc-weld, similar to electrical welding at very high currents leading to enormous amounts of heat being released. This is due to the resistivity created within the now-separated metals. This would immediately begin the release of intense heat, then pyrolytic effects at the surface of the surrounding material.

At this time in the fire’s progression, incipient products of combustion such as minute amounts of vapor during “pre-fire” would occur – prior to flame with no visible smoke and very small particulate concentration in the air. Incipient smoke detection systems may, or may not, pick up this small amount of pre-flame burning dependent on air circulation, enclosures’ construction, and where and how the event occurs.

Smoldering, that of slow, low temperature, flameless fire is a form of combustion, but this would not be the most likely scenario in the high voltage compartments.

What could take place is a runaway expansion of the fire model since the heat is dramatically developing in an instant and that flaming of any surrounding portion that is susceptible to combustion at those temperatures would be consumed. What the literature states is the possibility of implosion and explosion.

Explosion can occur when cooler air or moisture is brought into the somewhat sealed enclosure at higher humidity and the heat turns the condensed air to steam rapidly. As this occurs, the pressure increases, and the enclosures turn to vessels. In the case of an implosion, a vacuum would have to actually be created within the enclosed space. There is no data to support either scenario, and it is unusual to predict an implosion. Our research data has indicated there is some concern of situations where for the same enclosure considerations, cool water sprinkler mist systems used outside the enclosure in the event of a fire may not be able to penetrate the enclosures.

Our final analysis reflects some of the most basic understandings of fire protection. The substation risk will mainly consist of Class C fires, being electrical in nature. There are limitations to the fire protection technologies and equipment, not to mention the application chemistry that is used in preventing, suppressing, or controlling electrical fires.

Our risk analysis has developed several points regarding the overall fire protection requirements of the enclosure and the operation of the space. These are as follows:

Class C, high current electrical fires cannot be contained or controlled without de-energizing the electrical equipment. The heat released during this electrical fault is so significant that no amount of water or other elements would be able to reduce the intense reaction.

Until the electrical system is de-energized, a fire and heat exposure to the alternate switchgear not in the fire event shall be considered the most important aspect – to save the side which is not in combustion.

Fire detection will be required to sense incipient fires, smoldering, and pyrolytic reactions at the earliest moments to alert the fire command center and to expect fire service response time of no more than two minutes after alarm. Before fire service can attack the fire, de-energization should take place

The opportunities for the protection of high powered switchgear are to be continued in this month’s chapter meeting... **PAGE 3**

By Jerry Forstater & Dan Broughton of *Professional Systems Engineering LLC*

Significant Changes to National Fire Alarm & Signaling Code

By Wayne Moore

NFPA 72-2016, *National Fire Alarm and Signaling Code*®, was issued on August 18, 2015 and had an effective date of September 7, 2015. Both the Code and its associated Handbook became available in early October. What are some of the more important changes? First of all some of the features used in previous editions that often helped the review of changes are not available in this edition. For example, the Cross reference from 2016 to 2013 editions will only appear in the Handbook and Code changes in the new edition are no longer indicated by a vertical rule beside the paragraph, table, or figure in which the change occurred. And where one or more complete paragraphs have been deleted, the deletion is no longer indicated by a bullet (•) between the paragraphs that remain. The absence of these tools will obviously require the users of the new Code to thoroughly review the requirements before making any design decisions. It is not possible to review all of the changes to the Code but the goal of this article will be to highlight the significant changes. [READ MORE](#)

SFPE Annual Scholarship Information

The Scholarship Committee of the *Philadelphia-Delaware Valley Chapter of the Society of Fire Protection Engineers* is pleased to announce its offering of scholarships for the 2015-2016 academic year. We are seeking candidates for consideration to receive awards from the John D. Cook III Scholarship Fund, for demonstrated academic achievement. In the past, scholarship awards ranging from \$500.00 to \$1,500.00 have been awarded. More than one scholarship may be awarded, depending on the number and quality of applications received.

The purpose of these scholarships is to promote the science and practice of Fire Protection Engineering and its allied fields. Students need not be enrolled in a fire protection engineering degree program, but may be in an allied engineering or science program and demonstrate an interest in fire protection. **The scholarship will be awarded for demonstrated academic achievement and performance in the field of fire protection.**

Candidates must be full-time students, and have attained at least sophomore class standing or have completed at least one semester of study in a two-year program as of the end of the fall semester, 2014 and demonstrate a serious interest in a career in fire protection, and shall be a resident of one of the areas described in the Criteria and Information Sheet attached to the scholarship application.

Applicants should submit a copy of the enclosed application form, a full official transcript (including course load for the current semester), and a letter of introduction that outlines their qualifications for this scholarship and any other information they feel would help committee members in their selection. Proof of **permanent residence** in the scholarship area is an eligibility requirement. Submission of such evidence will be left to the discretion of each applicant; each case will be evaluated during the selection process. If there are any questions with regard to a student's eligibility for this scholarship, they are encouraged to submit an application. They may also contact the Scholarship Committee by telephone at the number listed below.

Completed applications must be received by **MARCH 1, 2016**. No applications will be accepted after this date. Scholarship winners will be contacted by telephone or email and the awards will be presented at the May, 2016 meeting of the Philadelphia-Delaware Valley Chapter of the SFPE.

This form will also be available on our Chapter website at www.spfephiladelphia.org/. The PDF version of the application form contains fields that may be used to fill in applicant general information. Please type or print legibly.

Please contact **Mr. Dave Kriebel, Scholarship Committee Chair** at 215-446-4610 during normal business hours if there are any questions concerning completion of the applications. He may also be reached via email at dave.kriebel@gsa.gov

“Whatever you do in life, surround yourself with smart people who'll argue with you.”

John Wooden

Fire Sprinkler Incentive Act Re-Introduced

On Tuesday, September 22, Congressmen Tom Reed (NY-23) and James “Jim” Langevin (RI-2), AFSA’s 2007 Advocate of the Year, introduced the Fire Sprinkler Incentive Act ([H.R. 3591](#)). Senators Susan Collins (ME) and Thomas Carper (DE) introduced identical legislation, [S. 2068](#), in the Senate on the same day.

As introduced, the bill would amend the Internal Revenue Code of 1986 to include automated fire sprinkler system retrofits as section 179 property and classify certain automated fire sprinkler system retrofits as 15-year property for purposes of depreciation. Currently, the depreciation schedule for a fire sprinkler retrofit is 39-years in a commercial building and 27 ½-years in a residential building.

This legislation is supported by the Congressional Fire Services Institute (CFSI) and was drafted in response to Rhode Island’s Station Nightclub Fire that killed 100 people in 2003.

“The Station Nightclub Fire was one of the worst tragedies in Rhode Island history, and I will never stop fighting for precautions that have the potential to save lives and avert a disaster like the one we saw on that horrific night in West Warwick,” said Congressman Jim Langevin (D-RI) [in a statement](#). “Fire sprinklers save lives, but cost considerations have prevented too many property owners from making this important investment. We need to make it easier and more cost-effective to install these life-saving systems.”

According to the National Fire Protection Association (NFPA) in 2014, there were 1,298,000 fires reported in the United States, leading to 3,275 civilian fire deaths; 15,775 civilian injuries; and \$11.6 billion in property damage. When you include the indirect cost of fire, such as lost economic activity, the cost is closer to \$108 billion annually. Studies by NFPA have concluded that buildings outfitted with sprinklers reduce the death rate per fire by at least 57 percent and decrease the property damage by up to 68 percent.

H.R. 3591 has been referred to the House Committee on Ways and Means. S. 2068 was referred to the Senate Finance Committee.

Voice Your Support to Congress

As one of its top legislative priorities, AFSA urges all industry members to write their representative asking for their support of this legislation and thanking them if they have already pledged their support of the legislation. Find your Representative at [house.gov/representatives/find/](#) or Senators at [senate.gov/general/contact information/senators_cfm.cfm](#).

“Fire sprinklers save lives, but cost considerations have prevented too many property owners from making this important investment.”

Whatever It Takes!

Firefighters are known to do whatever it takes. They get called for all sorts of situations: cats in trees, resident assistance calls, etc. We also collect Christmas trees when the season is over, bring smoke alarms to folks in need, and act as good examples in a myriad of ways in the community. When there’s an accident, any one of a number of things can happen. Here’s one more thing to add to that number: firefighters reading to a scared little boy. This image came from FireRescue1 and was originally posted to a Facebook account in the name of Steffani Blair. Thank You for sharing!



From the NFPA website

JANUARY 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Happy New Year!	2
3	4	5	6 ASCET SJ chapter Mtg	7	8	9
10	11	12 SFPE Mtg 6 PM	13	14	15	16
17	18	19 ASCET Berks chapter	20 ASCET Delaware chapter	21	22	23 Future City Competition
24	25	26 ASCET Phila chapter	27	28	29	30
31						

Monthly Events

- January 1: Happy New Year!
- January 6: NJ ASCET Meeting @ the Collins House in Collingswood, NJ
- January 12: SFPE meeting @ Jacobs Engineering 6PM
- January 19: Berks County ASCET Chapter Meeting @ Valentino's in Kutztown 6PM
- January 20: Delaware ASCET Chapter Meeting @ Charcoal Pit on Kirkwood Highway in Wilmington
- January 23: Future City Competition at Archbishop Carroll High School, Radnor, PA
- January 26: Phila. ASCET Chapter Meeting location TBD (date may change also)

PHILA - DELAWARE VALLEY SFPE

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Mission Statement

The Philadelphia/Delaware Valley Chapter purpose is to advance the art and science of fire protection engineering and its allied fields, for the reduction of life and property losses from fire, to maintain high ethical standards on engineering among its members and to foster fire protection education.

Recognition of fire protection engineering as a discrete engineering discipline is a prime goal. Engineering disciplines exist because there is a special body of knowledge based on the fundamentals of mathematics, physics, chemistry, engineering science and economics.

The chapter strives to facilitate sharing of sound engineering experiences and knowledge between its members and the fire protection community in general with an active program of education and scholarship activities.



Maryland Adopt Latest Editions of NFPA Fire Safety Codes

The State Fire Prevention Commission in Maryland has adopted the 2015 editions of NFPA 1, Fire Code™, and NFPA 101®, Life Safety Code®.

Both codes are used to protect people and property in new and existing buildings. The Life Safety Code, used in all 50 states, mandates building design construction, operation, and maintenance requirements to protect building occupants from the dangers caused by fire, smoke, and toxic fumes. NFPA 1 provides requirements necessary to establish a reasonable level of fire safety and property protection from hazards created by fire and explosion.

"Life safety is always our top priority," said State Fire Marshal Brian S. Geraci. "The latest editions of these widely used codes will continue to allow us the ability to provide the highest level of protection for the people accessing structures in Maryland. When such substantial codes are updated with the latest safety advancements, people deserve to have those protections in place."

From the NFPA website.