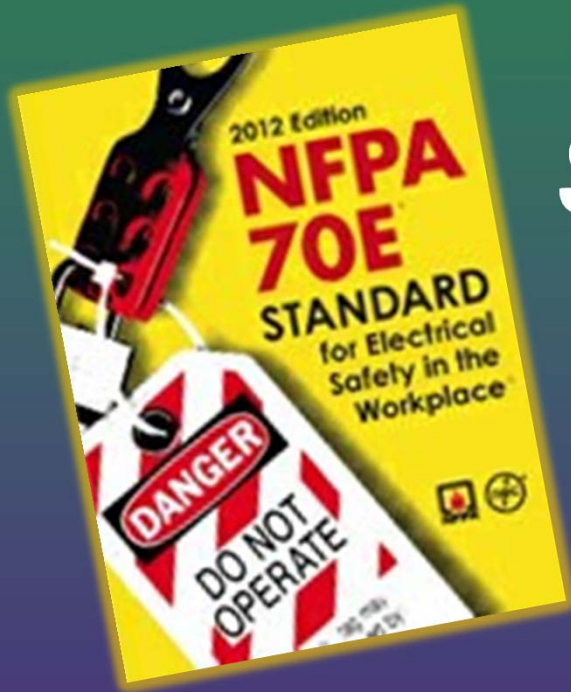


# IESALC

Illuminating Engineering Society  
of North America  
Aviation Lighting Committee



# NFPA 70E

## STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE



**2012 Edition**

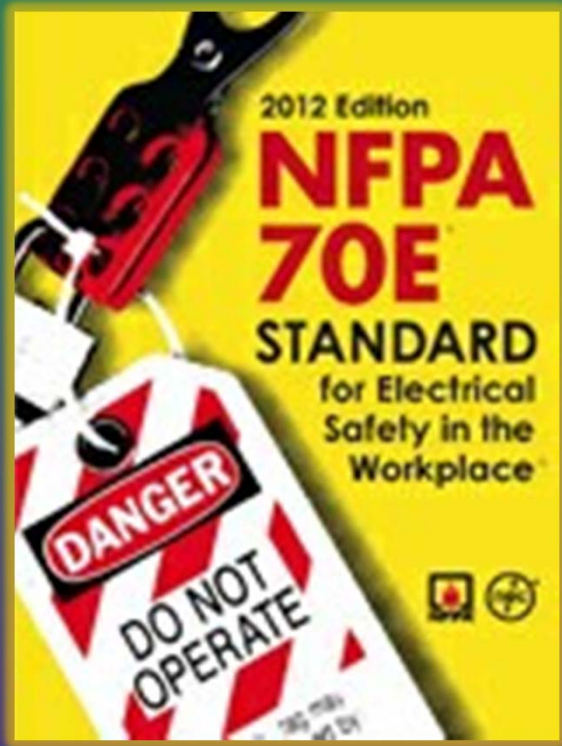
2011-IESALC  
Wilmington, NC

**Presented to:**  
IES ALC Fall Conference 2011

**Presented by:**  
Carl Johnson  
Mark Goodacre © 2011



# NFPA 70E;



## STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE

- *2012 is the current (9<sup>th</sup>) edition*
- *Effective date August 31, 2011*
- *First edition was 1979*
- *NFPA 70E is a consensus standard*

# CONSENSUS STANDARDS

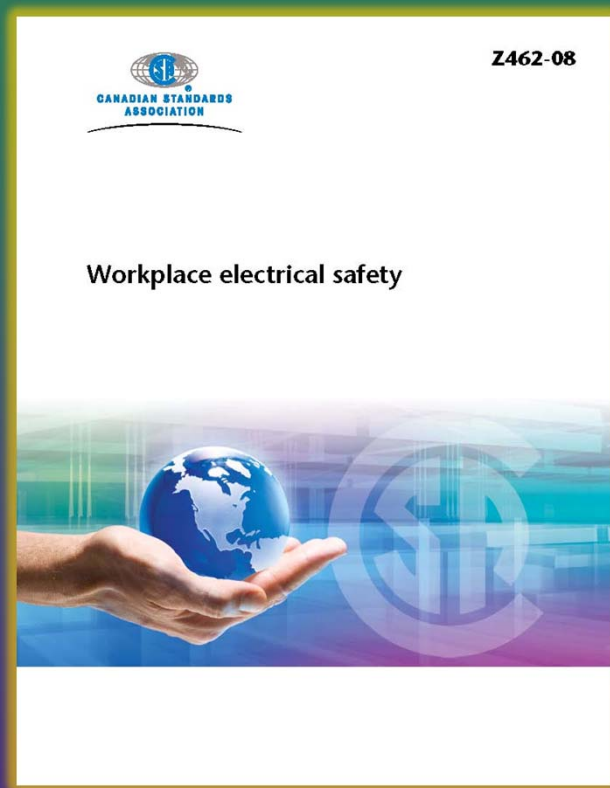
**1910.2(g) "National consensus standard" means any standard or modification thereof which**

- (1) has been adopted and promulgated by a nationally recognized standards-producing organization under procedures whereby it can be determined by the Secretary of Labor or by the Assistant Secretary of Labor that persons interested and affected by the scope or provisions of the standard have reached substantial agreement on its adoption,*
- (2) was formulated in a manner which afforded an opportunity for diverse views to be considered, and*
- (3) has been designated as such a standard by the Secretary or the Assistant Secretary, after consultation with other appropriate Federal agencies;*

# CONSENSUS STANDARDS

*“Industry consensus standards, such as NFPA 70E, can be used by employers as guides to making the assessments and equipment selections required by the standard. Similarly, in OSHA enforcement actions, they can be used as evidence of whether the employer acted reasonably.”*

# CSA



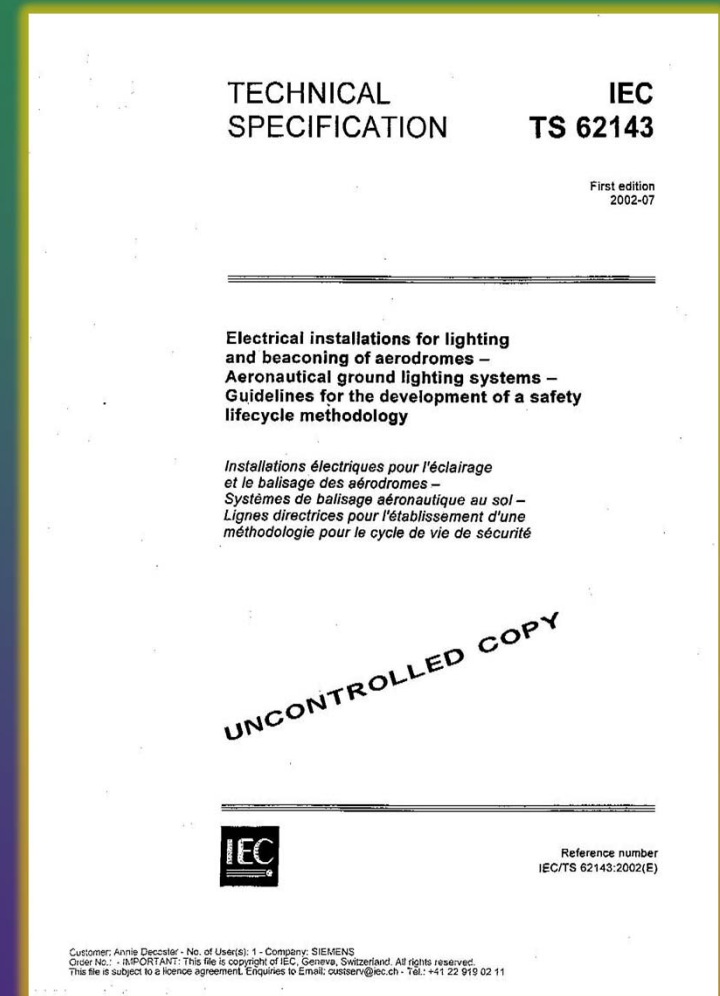
## **CSA Z462-08;** **WORKPLACE ELECTRICAL** **SAFETY**

# CENELEC

**IEC 62143 - 2002;**

**ELECTRICAL  
INSTALLATIONS FOR  
LIGHTING AND  
BEACONING OF  
AERODROMES –**

**Aeronautical ground lighting  
systems – Guidelines for the  
development of a safety lifecycle  
methodology**





# WHY SAFETY?



# DEFINITIONS

## ARTICLE 100 - DEFINITIONS:

- **“Electrical Hazard.** *A dangerous condition such that contact or equipment failure can result in electric shock, arc flash burn, thermal burn, or blast. (70E)”*
- **“Electrical Safety.** *Recognizing hazards associated with the use of electrical energy and taking precautions so that hazards do not cause injury or death. (70E)”*





# WESTEX VIDEO

- VIDEO 1

ARC-FLASH 7.1 CAL/CM<sup>2</sup>

- VIDEO 2

POLY-COTTON SHIRT AND PANTS  
ARC-FLASH 10 CAL/CM<sup>2</sup>

- VIDEO 3

WESTEX ULTRASOFT ARC RESISTANT  
CLOTHING 7 OZ SHIRT 7 9 OZ PANT  
ARC-FLASH 10.4 CAL/CM<sup>2</sup>



*Clothing on Manikin:*

*Incident Energy: 7.1 Cal/cm<sup>2</sup>*

*Disconnect: 480V, 30AMP*



*Electric Arc Flashes Created by 70E Solutions*

 **UltraSoft®**  **UltraSoft AC™**  **Indura®**



*Clothing on Manikin:*

## **Poly/Cotton Shirt & Pants**

*Incident Energy: 10.0 Cal/cm<sup>2</sup>*

*Disconnect: 480V, 200AMP*



*Electric Arc Flashes Created by 70E Solutions*

 **UltraSoft®**  **UltraSoft AC™**  **Indura®**



*Clothing on Manikin:*

**UltraSoft® 7 oz. Shirt & 9 oz. Pants 100 IL**

*Incident Energy: 10.4 Cal/cm<sup>2</sup>*

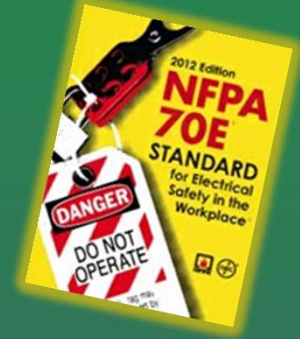
*Disconnect: 480V, 100AMP*



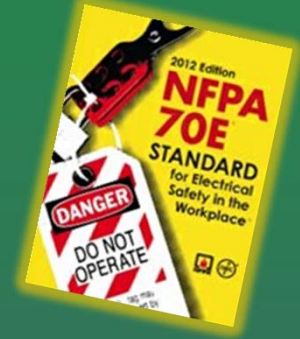
*Electric Arc Flashes Created by 70E Solutions*

 **UltraSoft®**  **UltraSoft AC™**  **Indura®**

# ARC BLAST

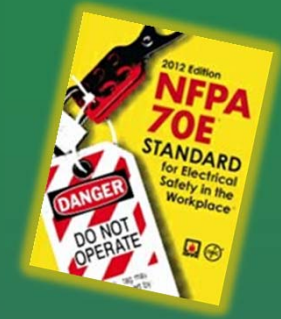


# ARC BLAST





# ARC-FLASH AND SHOCK HAZARD



## DURING A RECENT TRADE CONFERENCE:

- Two of the session speakers; *H. Landis “Lanny” Floyd*, principal consultant for electrical safety and technology at DuPont Engineering; and *Joe Weigel*, product manager for Square D Services at Schneider Electric were having a conversation.
- Weigel and Floyd discussed how a growing industry has been built around companies providing arc flash hazard analysis, training, personal protective equipment (PPE), and arc mitigating equipment. Floyd said that when some people offer seminars on “NFPA 70E,” the agenda lists only arc flash related topics. *“‘NFPA 70E’ is not just about arc flash, it’s about ELECTRICAL SAFETY,” he said. “The biggest hazard is still electrical shock.”*

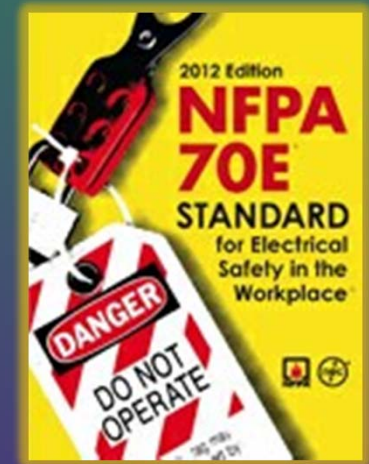
# **ELECTROCUTION**

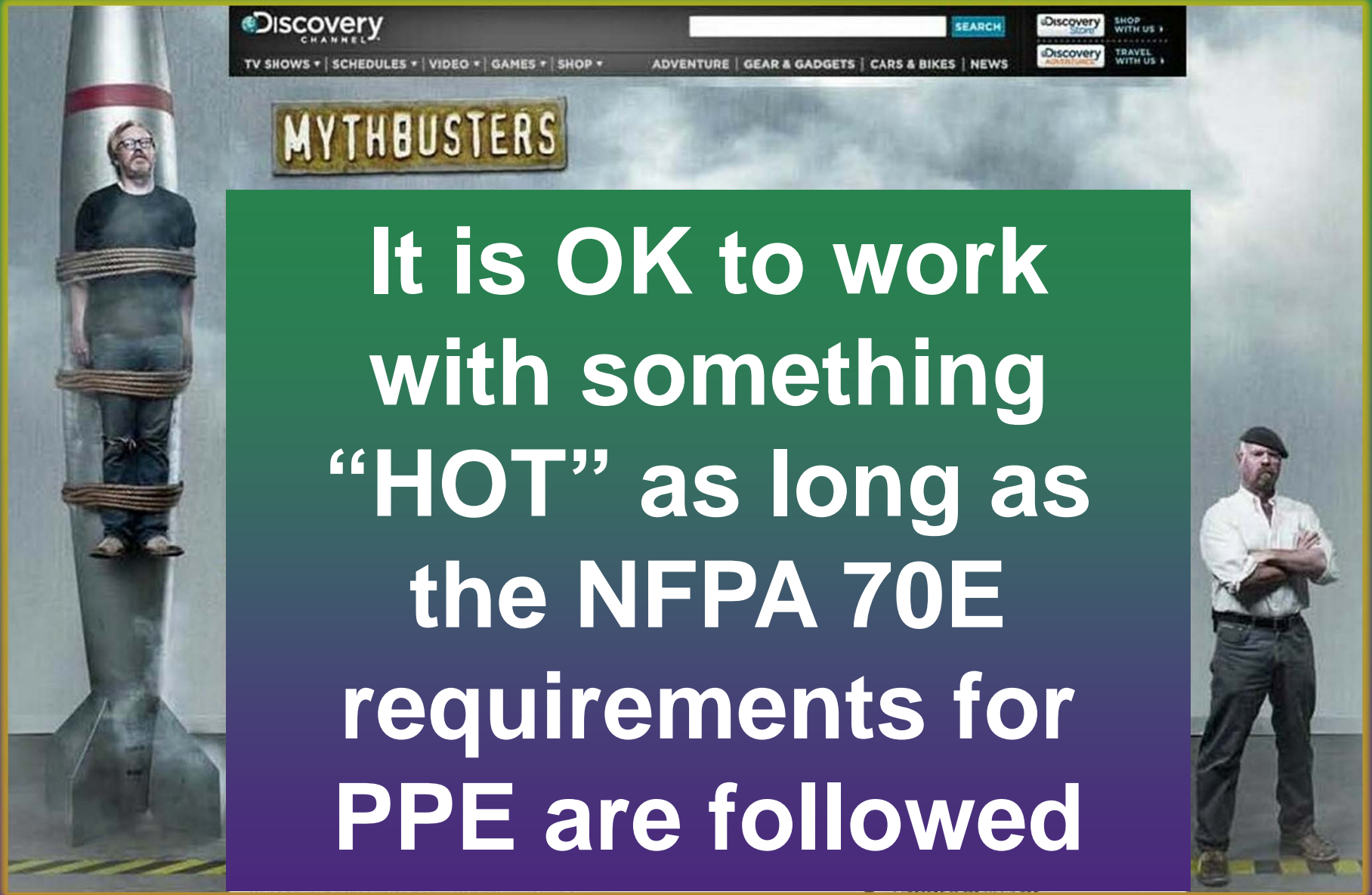
## **IS ONE OF THE LEADING CAUSES OF ON-THE-JOB FATALITIES IN THE UNITED STATES.**



# SHOCK AND ELECTROCUTION

- Electrical hazards cause more than 300 deaths and 4,000 injuries in the workplace each year.
- Electrical accidents rank sixth among all causes of work-related deaths in the U.S.
- During the work day, every 30 minutes a worker is hurt so severely from electricity that it requires time off the job.
- Over the last 10 years, more than 46,000 workers were injured from on-the-job electrical hazards.

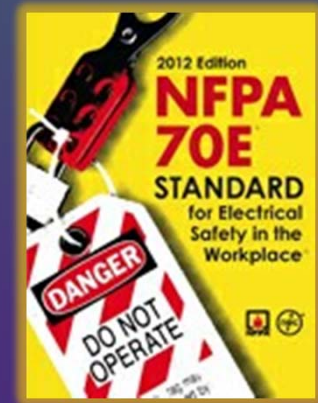




# "BUSTED"

## EXCEPTIONS:

1. ***GREATER HAZARD – Life Safety***
2. ***INFEASIBILITY – Voltage Testing***
3. ***LESS THAN 50 VOLTS***



# DISCUSSION



# NFPA 70E;

STANDARD FOR  
ELECTRICAL SAFETY IN  
THE WORKPLACE

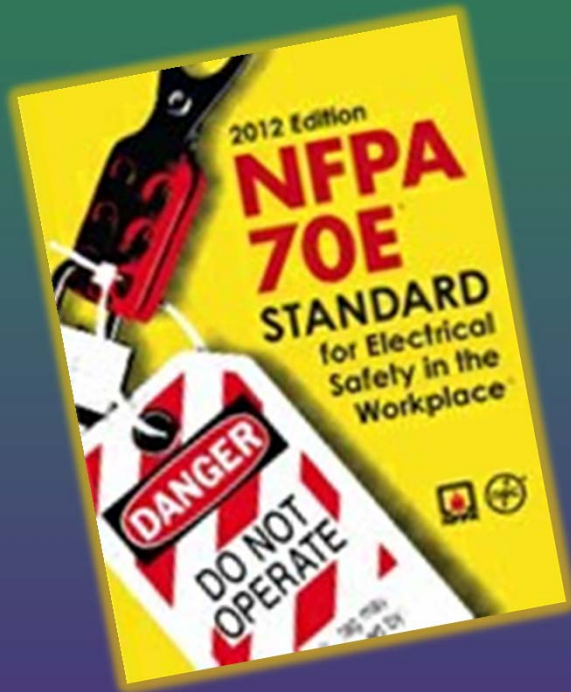


# THANK YOU



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# NFPA 70E

## *2012 STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE*

**Presented to:**  
IES ALC Fall Conference 2011

**Presented by:**  
Carl Johnson  
Mark Goodacre © 2011



# IES 2011 PRESENTATION REFERENCES

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