

# NFPA 70E TRAINING

## Workgroup #1

Goal of workshop is consistency of electrical safety training!

## TARGET AUDIENCE

- The EFCOG Electrical Safety Core Training will be designed to meet the minimum electrical safety training requirements of NFPA 70E for unescorted access to the Arc Flash and/or the Shock approach boundaries by employees, who are justified, authorized, and qualified.
- **Note 1: *The term qualified as defined by NFPA 70E refers to employees who “have the skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved.”***

## TARGET AUDIENCE (CONT.)

- ***Note 2: This training will cover all of the NFPA 70E requirements for working within the hazard boundaries up to and including crossing the Prohibited Approach Boundary and making contact with energized conductors and circuit parts.***
- ***Note 3: This training will be developed into individual modules. All modules of this training will be required to work within the Arc Flash boundary and the Prohibited approach boundary. Qualified employees who are required to work within the Arc flash boundary and or the Limited approach boundary will only be required to complete the necessary modules to meet the requirements of NFPA 70E to perform their job assignment safely.***

## TARGET AUDIENCE (CONT.)

- *Note 4: Training must include live presentation.*
- *Note 5: Continue discussion of site similarities at February EFCOG meeting.*
- Additional training may be required to ensure knowledgeable use of specific equipment used to perform work on exposed electrical circuits.

# Different types of “Electrical” Workers

- Unqualified worker (Office staff)
- Unqualified worker with higher than normal hazard (Painter, janitor, researcher)
- Qualified, Entry to L.A.B., No entry to R.A.B or A.F.B. (Power Operator, researcher)
- Qualified, Entry to R.A.B., No entry to A.F.B. (Researcher)
- Qualified, Entry to R.A.B. and A.F.B. (Electrician)
- Qualified, Entry to R.A.B. and A.F.B., High Voltage >600 volts (Lineman)

Note: Special areas including; H.V.D.C., Magnets, Pulsed Power/Capacitor Banks, RF, Battery banks, etc.

# MODULE 1


## Understanding the Hazards (Awareness level training)

- Importance of having an electrically safe workplace
- Define Drivers (NFPA-70E, OSHA, etc..)
  - Key terms
- Shock
- Arc
- Blast
- Thermal
- RF
- Capacitor Banks
- Battery Banks/UPS
- secondary electrical hazards associated with operation of R&D lasers

## MODULE 2

### Safety Related Work Practices and Procedural Work Requirements (awareness level information)

- Procedural Requirements
  - LO/TO
  - Work Control as defined by 70E
    - Define Boundaries (LAB, etc.)
  - Local Work Control Programs
  - PPE



## MODULE 3

### Hazard Identification (awareness level)

- Recognition of hazards
- Response to identified hazards

## MODULE 4

### Emergency procedures (both awareness and qualified worker)

- Personal Shock
- Co-Worker Shock
- Co-Worker Rescue
  - Remove source
- Electrical Fire

# MODULE 5

## The Qualified Electrical Worker

- Special precautionary techniques
  - Two-man rule
  - Calculated Moves
    - Physical Parameters
  - Alerting Techniques
    - Look alike equipment
  - Insulating equipment
- Worker Personal Protective Equipment and Use and Selection
  - PPE/FR Apparel
  - Insulated shielding material
  - Insulated tools
  - Test equipment

## MODULE 5

### The Qualified Electrical Worker (Cont.)

- Distinguish exposed energized parts
- Skills to determine voltage
  - Considerations for selection of voltage detectors
  - Use of voltage detectors
- Determining Approach distances
  - Shock hazard analysis
  - Flash hazard analysis

## MODULE 5

### The Qualified Electrical Worker (Cont.)

- Determine degree/extent of hazard,
  - Integrated Safety Management (or your Site equivalent)
    - Job planning for task
    - Hazard Analysis
    - Mitigate Hazards
    - Complete Work
    - Evaluate Results and Lessons Learned
  - PPE
  - Stop/pause points

# NFPA 70E TRAINING SURVEY TOPICS

(Will be sent in spreadsheet format)

- How well does your training match topics on this outline?
- Do you cover this topic?
  - What training format do you use for this? (live classroom, web, self-study, OJT)
  - How much time (minutes or hours) do you spend on it.
- Is anything missing from this list?
- How are you meeting the training needs of the different groups of workers as it relates to electrical hazards in the work place? (Lineman, Electricians, R&D, Non-Electrical)
- What is your retraining frequency?
  - What training format do you use for this? (live classroom, web, self-study, OJT)

# NFPA 70E TRAINING SURVEY TIMELINES

- Survey plans and required dates of completion
  - Send out survey to sites to determine what exists (~Oct 26<sup>th</sup>, 2009)
  - Survey due back to Martin Iedema by Dec 4<sup>th</sup>, 2009
  - Obtain lesson plans/training material from all sites (Due to Paul Chapman Nov. 20<sup>th</sup>, 2009)
- Evaluate survey (Complete by Jan, 8<sup>th</sup>, 2010)
- Establish agenda for Feb meeting (Paul Chapman, Jan. 20<sup>th</sup> 2010)
- Evaluate lessons plans/training materials to determine best practices (Feb EFCOG meeting)

# ISSUES WE NEED TO LOOK AT IN NEAR FUTURE

- NFPA 70E 2009: Demonstrated proficiency.

We must discuss how this demonstration is completed as coordination by our sites now will alleviate differences down the road.

- Training of Electrical Safety Officers, same issues as above.
- Training of Non-NRTL testing, same issues as above.
- Other areas of concern?

QUESTIONS???



**Big Scary Laser**

**Do not look Into beam  
with remaining eye**

[www.electricstuff.co.uk](http://www.electricstuff.co.uk)