



**Vincent Dunn**  
Deputy Chief F.D.N.Y. (Ret.)  
For lecture information call 1-800-231-3388



## **JANUARY-FEBRUARY-MARCH NEWSLETTER - ELECTRICITY**

### **Fire ground electrocution**

To survive firefighting, firefighters must know how other firefighters have died fighting fires. Electrocution is one cause of fire ground death.

### **Causes of firefighter death**

1. Stress
2. Falls, falling objects in contact with electricity and other dangerous objects
3. Products of combustion
4. Structural collapse



# Vincent Dunn

Deputy Chief F.D.N.Y. (Ret.)  
For lecture information call 1-800-231-3388



Firefighters electrocuted while fighting fires are often using metal ladders or metal tools near line electricity. One firefighter was electrocuted when repositioning a metal ground ladder. Three firefighters were carrying the ladder vertically; one slipped on ice, causing the ladder to sway and the tip hit a nearby overhead electric wire spanning street utility poles. Although electric power shut off would not have prevented this firefighter's death, cutting off electric power to a burning building is an important safety procedure. Fire officers should know who, when, where and how to shut off electric power to a burning building.

## **Who**

When there is a working structure fire, an electrician from the local utility company should respond and report to the officer in command. The utility company employee should be equipped and know how to remove power to a burning building by disconnecting wires from a utility pole or street shut off. The utility company employee does this upon orders of the chief in charge. When a utility company cannot guarantee 24-hour availability to respond to fires, they must train firefighters to do the job.

## **When**

Generally at a structure fire, electric power should remain on for as long as safety permits. Electricity provides power for lights, which assists search and rescue operations. It keeps fire pumps running for fire extinguishment and elevators operated by firefighters for evacuation. However, there are certain times during a fire or emergency operation when electric power should be immediately removed to protect firefighters and trapped victims.



# Vincent Dunn

Deputy Chief F.D.N.Y. (Ret.)  
For lecture information call 1-800-231-3388



1. Electricity should be cut off before overhaul starts. Normal current in a residential building can kill firefighters. During overhaul, walls, ceilings and floors are sometimes broken open in order to search for hidden fire. Metal tools can come in contact with electric wires behind these walls and ceilings. Firefighters standing on a wet floor in a burned out room can get a metal tool entangled in a live wire. This can cause the firefighter to be electrocuted or severely shocked. So, after a fire is extinguished and overhaul is about to start, electric power should be shut off.
2. When electricity is the source of heat causing the fire, power must be immediately cut off. Also, if a victim is being electrocuted, power must be removed from the wire or appliance threatening the trapped person. To handle this type of fire or emergency, firefighters must be trained to safely shut off electricity to residential buildings. Utility companies cannot respond quickly enough to do the job.
3. Explosions and structural collapse rip open walls, ceilings and floors of a structure. Live electric wires are threaded throughout the rubble, hanging dangerously in midair and laying around the ground. A collapse search and rescue plan must be put into action. This plan must include: safety survey and reconnaissance, surface search and rescue, void search, selected debris removal and general rubble removal. One of the most important parts of the first step of the collapse rescue plan is to shut off all the utilities such as water and electricity. Shutting off electric power can save the lives of searching firefighters and trapped victims in the collapse rubble.

## **Where**

The fire officer ordering power shut off must limit the area of electric power loss to as small an area as possible; increasing the area affected as needed: one room, one apartment, one floor, one building section. Also, the electric power should be cut off as near to the area of operations as possible. For example, first consider removing apartment fuses or opening circuit breakers. If this is not possible, consider shutting off the power from the electric panel box in the



# Vincent Dunn

Deputy Chief F.D.N.Y. (Ret.)  
For lecture information call 1-800-231-3388



basement. Only utility company employees or trained firefighters would be permitted to pull meters outside a residence or cut electric wires. Firefighters ordered to remove electric power should know the hazards they face. There are several dangers firefighters are exposed to when cutting off electric power to a structure. Firefighters sent to basements to pull the switch on an electric panel box have been severely burned in several ways. Searching for an electric panel box in the dark or in smoke, firefighters have walked into live electrical equipment. When the cover to the electric equipment has been left open or removed, firefighters have been severely burned or electrocuted. Also when you pull the switch to open the circuit, if the cover to the electrical panel is open or removed, arcing or an electric flame can explode outward and burn the firefighters standing in front of the panel box.

## **How**

To protect yourself when pulling a switch to an electric panel box, use a light to locate the box; make sure the panel box cover is closed, and stand away from the electric panel box. After the switch is opened, an arc explosion inside the enclosed box can blow the cover or panel off the wall. Eye shields should be donned or an SCBA facemask worn. Meters outside private dwellings should only be removed when life is threatened and the inside service switch box in the basement cannot be reached because there is a danger of arcing during the meter removal from the panel. Whenever electric current is interrupted, an arc can be produced. This is an explosion, like a flash of blinding light. Hot sparks and splattering molten metal may accompany the arc explosion. Safety precautions recommended when pulling meters outside a private dwelling are: protective lineman gloves, eye shields, standing on rubber matting or dry wood surfaces and keeping the face and body away from the meter in case there is an arc.

## **Electrocution**

If an electric panel box, in a basement or an outside meter is not available to cut off electric power, electric wires entering the residential building may have to be cut. This is



# Vincent Dunn

Deputy Chief F.D.N.Y. (Ret.)  
For lecture information call 1-800-231-3388



extremely dangerous. Only a utility company employee or trained firefighter should do this. A study by the National Institute for Occupational Safety and Health revealed how incidents of electrocution occur most often around normal house current 110-120 volts. The study also revealed "many personnel did not realize that contact with 110/120 volts could cause death." The following safety precautions must be taken by utility company personnel or trained firefighters when cutting electric wires:

1. Wear rubber lineman gloves at all times
2. Wear eye protection at all times
3. Use lineman-cutting tool
4. Cut one wire at a time
5. Stand on a dry non-conductive rubber mat or dry wood surface.

Have a person stand by for assistance

## **Lessons Learned**

Fire departments must establish preplanned emergency responses with local utility companies and train firefighters to do the electric shut off procedures. Departments must provide trained firefighters with required personal protective equipment: rubber nonconductive mats, lineman gloves and lineman insulated cutting tools. If utility companies do not respond, and we don't train our firefighters to shut off electricity, then untrained firefighters may risk their lives attempting an extremely dangerous act to save lives.

## **Questions**

1. Which is not a leading cause of Firefighter deaths?
  - A. Stress
  - B. Falls
  - C. Products of combustion
  - D. Strains and sprains



# Vincent Dunn

Deputy Chief F.D.N.Y. (Ret.)  
For lecture information call 1-800-231-3388



Answer \_\_\_\_\_

2. When should the incident commander order electric shut off?
  - A. Before overhauling begins
  - B. After overhauling ends
  - C. Before leaving the scene
  - D. Never

Answer \_\_\_\_\_

3. Most firefighters are electrocuted by what voltage?
  - A. 110-120 voltage
  - B. 220 voltage
  - C. High voltage
  - D. None of the above

Answer \_\_\_\_\_

4. True or false - Utility companies should respond to every working fire.

Answer \_\_\_\_\_

5. Electric wires should be cut by?
  - A. Utility workers



# Vincent Dunn

Deputy Chief F.D.N.Y.( Ret.)  
For lecture information call 1-800-231-3388



- B. Utility workers and/or trained firefighters
- C. Chief officers only
- D. None of the above

Answer \_\_\_\_\_

**Answers:** 1. D; 2. A; 3. A; 4. True; 5. B