



# PLAYING IT **SAFE**

## Working Safely with Electricity

*Concerns for Engineers, Linemen and Electricians*

Electricity is powerful and dangerous, plain and simple. As a lineman, engineer or electrician, you come in direct contact with electricity via overhead lines, cable harnesses and circuit assemblies.

To protect yourself while working with electricity, consider these safety recommendations when working near generators, power lines, extension cords and construction equipment.

### Generator Dangers

Generators are typically powered by gasoline using internal combustion engines to produce electricity. They produce carbon monoxide (CO), which is a colorless, odorless gas that can reduce your ability to breathe when it is inhaled. CO poisoning may produce symptoms such as headaches, nausea, tiredness and eventual unconsciousness. CO poisoning is potentially fatal.

When working with generators:

- DO NOT bring them indoors. Be sure they are located in a location where the exhaust gases cannot enter a building.
- Be sure that the main circuit breaker is OFF and locked out prior to starting any generator.

This will prevent inadvertent energization of power lines from the back feed electrical energy and can help protect you from possible electrocution.

- Turn off generators and let them cool prior to refueling.

### Power Line Dangers

Overhead and buried power lines are especially hazardous because they carry extremely high voltages of electricity. Fatal electrocution is the main risk, yet burns and falls are also serious hazards.

When working near power lines:

- Look for indicators, especially those buried underground.
- Stay at least 10 feet away from overhead power lines and always assume that they are energized.
- De-energize and ground lines when working near them.
- Use non-conductive wood or fiberglass ladders only; never use metal ladders.

### Extension Cords

Normal wear on cords can loosen or expose wires. In addition, cords that are not three-wire type are not designed for hard usage, which increases your risk of coming in



### Electricity is no Laughing Matter

Employees working near electricity can suffer injuries, ranging from minor burns to death. If you have questions about the equipment that you are using, contact your supervisor immediately to learn more about your risks and how to prevent injuries.

# PLAYING IT SAFE

contact with an electrical current.

When working with extension cords:

- Use cords that are only designed to meet Occupational Safety and Health Administration (OSHA) standards.
- Do not modify cords or use them incorrectly.
- Use factory-assembled cord sets and only extension cords that are three-wire type.
- Use cords, connection devices and fittings that are equipped with strain relief.

## Equipment

Due to the dynamic, rugged nature of construction work, normal use of electrical equipment causes wear and tear that can result in insulation breaks, short-circuits and exposed wires. If there is no protection in place, a ground-fault can send current through your body.

When working with construction equipment:

- Use ground-fault circuit interrupters (GFCIs) on all 120-volt, single-phase, 15- and 20-ampere receptacles, or have an assured equipment grounding conductor program (AEGCP) in place.
- Use double-insulated tools and equipment that are distinctively

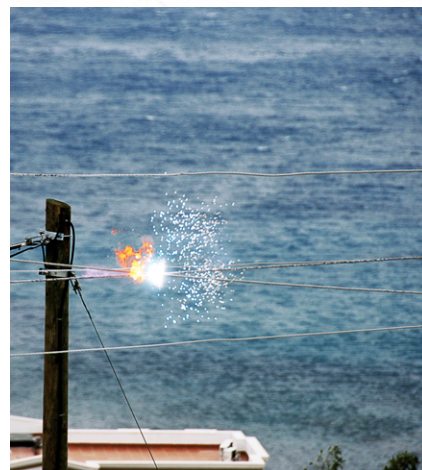
marked.

- Visually inspect all electrical equipment before use. Remove any equipment with frayed cords, missing ground prongs, cracked tool casings, etc. from service.
- When the power supply to electrical equipment is not grounded or the path has been broken, fault current may travel through your body, causing electrical burns or even death. Even when the power system is properly grounded, electrical equipment can instantly change from safe to hazardous because of extreme current conditions and rough treatment.

## General Tips

In addition, always follow these general precautions:

- Ground all power supply systems, electrical circuits and electrical equipment.
- Frequently inspect electrical systems to insure that the path to the ground is continuous.
- Do not remove ground prongs from cord- and plug-connected equipment or extension cords.
- Avoid standing in wet areas when using portable electrical tools.



## Serious Danger

Excessive electricity flowing through the human body can cause serious damage to internal organs. Resulting medical problems include internal bleeding, tissue destruction, and nerve or muscle damage. These internal injuries may not be immediately apparent to the victim or observers; however, left untreated, they can result in death.