Working Safely with Electricity
Concerns for Engineers, Linemen and Electricians

Electricity is powerful and dangerous. 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 cause symptoms such as headaches, nausea and unconsciousness when inhaled. CO poisoning can be fatal.

When working with generators, take the following precautions:

• Don’t bring them indoors. Be sure they are 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, take the following precautions:

• Look for indicators, especially those buried underground.
• Stay at least 3 meters away from overhead power lines and always assume that they are energized.
• Ground and de-energize 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 contact with an electrical current. When working with extension cords, take the following precautions:
• Use cords that are only designed to meet federal 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, take the following precautions:

• 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 is 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.

General Tips
In addition, always follow these general precautions:

• Ground all power supply systems, electrical circuits and electrical equipment.
• Frequently inspect electrical systems to ensure 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.