

Overhead Power Lines

by Carol Vincent, Arcis Corporation



Each year, construction workers are killed by electrocution from contact with overhead power lines. In the 12 month period ending December 31, 2004, 471 contacts with over head power lines were reported to Alberta Municipal Affairs.

There are distinct patterns to these fatalities. The most obvious is apathy. We all grew up around power lines. Since they are so common to us, they seem harmless. This serious mistake is fueled by two common misconceptions: the belief that some overhead lines don't carry enough power to kill, and the belief that power lines are well-insulated. Both are dead wrong.

The leading category of contact involves heavy equipment: cranes, drilling rigs, concrete pumps, aerial buckets and backhoes. The type of crane most likely to kill the operator is the boom-truck. Contact typically occurs with the rig's boom or load line. Boom trucks are designed with the controls located on the side of the truck chassis or, in some cases, attached to a tether. With both designs the operator is in direct contact with the ground. When contact occurs between the equipment and the power line, the electricity looks for the shortest distance to ground. The operator is almost always in this path and is electrocuted. But when a mobile crane contacts a power line, it is usually the rigger or ground worker who is electrocuted. Unlike the operator sitting in the cab, they are not isolated from the

ground. If a contact occurs while the rigger is attaching a load or guiding it with a tag line, electricity passes through the load line to the employee on the ground.

Drilling rigs, aerial buckets, backhoes, concrete pumps, and other high-reaching equipment account for other power line contacts. Fatalities associated with high-reach aerial baskets usually occur when the basket makes direct contact with the power line. Accidents involving drilling rigs, however, usually affect the ground employees. With most equipment, the largest number of contacts happens during machinery movement and not during the setup or takedown phase. The exception is concrete pumps, when incidents tend to occur during the takedown phase.

The use of metal extension ladders around power lines is also a frequent cause of fatalities. One study on ladder electrocutions found that virtually all fatalities involved metal ladders. Ladder contacts usually occur during erection, lowering or relocation of the ladder.

Protect yourself from live power lines; look around your work area and identify the location of all power lines before you move or erect any equipment. Make certain that no part of any equipment can come within a minimum of 3 m (10 feet) of the power line. Remember, this distance is greater for voltages above 75 kV. Don't operate equipment around overhead lines unless you are authorized and trained to do so. Contrary to what many people think, overhead power lines

do carry enough voltage to kill and most are not insulated.

Overhead line safety precautions

Please remember the following safety guidelines when working near overhead power lines:

- Keep a safe distance between yourself and power lines. Ten feet is generally considered the minimum safe distance.
- Before you begin working, check carefully for overhead power lines in the area you will be working. Don't assume that wires are telephone or cable lines: check with your electric utility for advice.
- If you need to cut a tree branch, be sure that it won't fall into power lines. Should a branch fall into our lines, call the local utility company representative.
- Even if a power line appears to be broken or grounded, keep your distance. The line could still be energized. Contact with an energized line can injure or kill.
- Work only in good weather. Thunderstorms, rain, winds and damp or icy ground can cause you to lose control and come into contact with power lines.
- Although overhead power lines may appear to be

insulated, often these coverings are intended only to protect metal wires from weather conditions and may not protect you from electric shock.

BC - H&S Regulations

Part 19.24 - Table 19.1 - General limits of approach

Voltage	Minimum Distance	
	Meters	Feet
Phase to phase		
750 V to 75 kV	3.0 m	10
75 kV to 250 kV	4.5 m	15
250 kV to 550 kV	6.0 m	20

AB - Occupational H&S

Part 17 Section 115 - Schedule 4

Voltage	Minimum Distance
Phase to phase	Meters
0 to 750 V (Insulated)	0.3 m
0 to 750 V (Bare)	1.0 m
750 V to 40 kV	3.0 m
69 kV, 72 kV	3.5 m
138 kV, 144 kV	4.0 m
230 kV, 260 kV	5.0 m
500 kV	7.0 m ●

Public Announcement

The Registrar of the Professional and Occupational Associations Registration Act is currently conducting a review to determine whether the following association should be registered under the Act.

Canadian Association of Geophysical Contractors

Geophysical Contracting is the set of seismic services that support oil & gas exploration activities by acquiring, processing and interpreting data to determine the geologic conditions underlying the surface of land or water.

Titles:

Professional Seismic Permit Agent
Professional Seismic Buried Facilities Locator
Professional Seismic Field Operations Supervisor

Abbreviation:

PSPA
PSBFL
PSFOS

Further information on this application can be found at www.cagc.ca, go to Quick Links and click on POARA Application.

The Registrar invites any concerned individuals or groups to submit written comments on the above application. The Registrar will provide a copy of all submissions to the Canadian Association of Geophysical Contractors. Please address your correspondence to:

The Registrar

Professional and Occupational Associations Registration Act,

Professions and Occupations

Human Resources and Employment ● 7th Floor, 10808 - 99 Avenue ● Edmonton, Alberta ● T5K 0G5

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