The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

# Lineman Electrocuted by Contacting Energized 12,000-Volt Power Line

FACE 89-06

## Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), performs Fatal Accident Circumstances and Epidemiology (FACE) investigations when a participating state reports an occupational fatality and requests technical assistance. The goal of these evaluations is to prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

On September 9, 1988, a 48-year-old male journeyman lineman was electrocuted when he inadvertently contacted an energized 12,000-volt power line while performing maintenance work on a utility pole.

## Contacts/Activities:

State officials notified DSR of this fatality and requested technical assistance. On December 15, 1988, a research safety specialist met with an employer representative, and visited and photographed the site.

## Overview of Employer's Safety Program:

The employer is a power line construction and maintenance company employing approximately 300 individuals. The company has been in business for 18 years. The company has written safety policies and procedures addressing all phases of company operations. Refresher training programs and periodic safety inspections are conducted by company safety personnel.

## Synopsis of Events:

On the day of the incident the victim was part of a four-man crew installing squirrel guards (plastic covers which fit over transformer connections to prevent a squirrel from contacting two points on the transformer and shorting out a circuit thereby causing a power outage).

At the time of the incident the victim was working on a pole which held a 25,000-volt transformer. A guy wire ran from the pole to the ground. The crew foreman was on the ground at the base of the pole, while the remaining two members of the crew were working on an adjacent pole from a bucket truck.

A cut-out switch on the jumper to the transformer had been opened, de-energizing the transformer so the squirrel guard could be installed. The victim was wearing a lineman's belt and was tied off above the neutral wire. His right foot was near or on the neutral wire insulator. The victim had removed his insulated lineman's gloves and was working bare-handed on a connection when he apparently slipped. As he did so his left hand contacted the energized side of the cut-out switch and a path to ground was established from the victim's left hand, across his chest, to the inside of his right calf, which was in contact with the bare neutral wire. The victim immediately collapsed, breaking the connection.

The foreman, observing the incident, immediately called for help. The occupant of a nearby residence also observed the incident and summoned local authorities. One of the co-workers attempted rescue but was unable to lower the victim from the pole. The bucket truck used on the adjacent pole was moved into position beneath the victim, and the victim was removed from the pole and lowered to the ground approximately 10 minutes after he had collapsed.

Responding emergency medical personnel were unable to detect any vital signs and immediately began cardiopulmonary resuscitation (CPR) on the victim. The victim was then transported to a local hospital where he was pronounced dead.

## Cause of Death:

The medical examiner listed the cause of death as accidental electrocution.

## Recommendations/Discussion

**Recommendation #1: The employer should require and enforce the use of personal protective equipment to protect employees from hazards associated with their work.**

**Discussion:** The employer requires the use of lineman's insulated gloves for maintenance work on utility poles. Although the victim was wearing his gloves, he removed them prior to the incident. Had he continued to wear his gloves, he might have survived the inadvertent contact with the energized connection. A company foreman observing the victim from the ground failed to ensure that the victim was wearing his gloves, permitting him to violate written company policy. Supervisors must ensure that company safety procedures are enforced in the field. Failure to do so may be perceived by employees as lack of management commitment to safety, or may give the false impression that safety policies are not necessary to prevent injury.

**Recommendation #2: Employees should be taught to maintain clearance when working in the vicinity of energized circuits. When adequate physical separation to prevent inadvertant contact is not possible, physical guards (barriers) should be placed between the worker and the hazard.**

**Discussion:** The victim was working in a position where he unintentionally contacted energized components on the utility pole. By positioning himself slightly lower on the pole, the task could have been completed from a position where such contact was not possible. OSHA regulation 1926.950 (c)(1)(i) specifies that an employee cannot approach within 2 feet of a 12,000-volt power line unless that employee is insulated or guarded from the energized part or the energized part is guarded or insulated from the employee. If a safe work position had been used, or if a line blanket or hose had been placed on the energized conductor, this death might have been prevented.

**Recommendation #3: Supervisory personnel for electrical contractors should conduct pre-job surveys of all worksites to determine what components can be de-energized prior to the start of work.**

**Discussion:** Whenever possible all electrical service should be de-energized prior to any work being performed in the proximity of such service. This provides passive protection of the worker. When this is not possible, guarding and physical isolation, as noted in recommendation #2, must be utilized to prevent contact with energized components. A pre-job survey

conducted by the on-site supervisor affords the opportunity to identify hazards and consider options for controlling them. Had this approach been taken, this fatality might have been prevented.

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