



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



An 18-Year-Old Groundman Electrocuted in North Carolina

FACE 87-53

Introduction:

The National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) is currently conducting the Fatal Accident Circumstances and Epidemiology (FACE) Project, which is focusing primarily upon selected electrical-related and confined space-related fatalities. The purpose of the FACE program is to identify and rank factors that influence the risk of fatal injuries for selected employees.

On June 1, 1987, a groundman was electrocuted when an energized power line broke and contacted a pole trailer while the victim was attempting to load a pole onto the trailer.

Contacts/Activities:

Officials of the Occupational Safety and Health Program for the State of North Carolina notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. On July 8, 1987, the DSR research team (two safety engineers) conducted a site visit, met with employer representatives, interviewed comparison workers, interviewed the next-of-kin, and photographed the accident site.

Overview of Employer's Safety Program:

The employer is an electrical contractor with approximately 1500 employees. The majority of income is generated through contracts with local utilities.

The employer's safety program appears to be comprehensive; however, this is the third electrically-related fatality involving employees of this employer within 26 months. The employer relies heavily upon on-the-job training.

Synopsis of Events:

On June 1, 1987, a five man crew (a foreman, two linemen, and two groundmen) were replacing an electric pole along a rural highway. The crew arrived at the work site at approximately 8:15 a.m. and by approximately 2:30 p.m. had installed a new pole and transferred four conductors (three energized lines and the neutral) from the old pole onto the new pole. A lineman with the support of a groundman had previously deadended all conductors and moved the saddle connections (



– shaped connectors used to connect smaller conductors to power lines) away from the pole. In order to load the old pole onto the pole trailer the workers moved the auger truck with the pole trailer into position. The truck and trailer were under the power lines and the workers did not ground the truck. A groundman (the victim) attached a winch cable to the old pole and took up the slack of the cable in preparation to load the old pole onto the pole trailer. The foreman was operating the winch and one of the other linemen was on the ground waiting to put a chain around the pole. The top of the pole was on the trailer and the bottom of the pole was on the ground.

The energized 13.2 kV (phase to ground) power line closest to the road broke approximately seven inches from the deadended assembly and fell, contacting the pole trailer. The victim provided a path to ground for the current through his contact with the winch cable and was electrocuted. At the time of the accident one of the linemen was working from an aerial bucket attaching the lightning protection for the transformers, but reportedly did not do anything that should have caused the power line to break.

The power line was de-energized when an oil switch recloser opened. Co-workers performed cardiopulmonary resuscitation (CPR) on the victim and emergency medical service (EMS) personnel arrived by ambulance shortly after being notified. EMS personnel provided advanced cardiac life support (ACLS) and transported the victim to the hospital where he was pronounced dead on arrival.

Cause of Death:

The cause of death was electrocution. An autopsy was not performed.

Recommendations/Discussion:

Recommendation #1: The safety program of the company should be evaluated to identify any shortcomings.

Discussion: Although the employer's safety program appears comprehensive on paper, this is the third fatality occurring to employees of this company during the last 26 months. The employer or an outside consultant familiar with electrical contracting should conduct a thorough evaluation of the safety program and its implementation. Specific areas that should be reviewed are safety procedures to be used during replacement of poles when energized conductors are present and policies concerning hazards associated with equipment that is the responsibility of the organization to which the employer is contracted (in this case the conductor may have been defective).

Recommendation #2: Training of employees should be evaluated.

Discussion: The employer relies very heavily upon on-the-job training of employees. On-the-job training can vary widely, may not address all required tasks and associated hazards, and is dependent upon the employee assigned to conduct the training. The employer or an outside consultant familiar with electrical contracting should conduct a thorough evaluation of all training provided to employees and assess its impact.

Recommendation #3: The employer should require trucks and trailers working under or around energized power lines to be grounded.

Discussion: The auger truck and pole trailer were not grounded at the time of the accident even though the crew was working directly under the energized power line.

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