The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

40-Year-Old Lineman Technician Electrocuted in North Carolina

FACE 86-50

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 August 26, 1986, a meter technician who was working overtime as a lineman technician was electrocuted when he contacted an energized conductor. The technician was attempting to repair a fallen power line.

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. A safety specialist and a research industrial hygienist from DSR met with company representatives, interviewed witnesses, comparison workers, and a surrogate for the victim, conducted a site visit, and photographed the accident site.

Overview of Employer's Safety Program:

The employer is a major electric utility in the southeastern United States and employs 21,000 workers in nine fossil fuel plants, three nuclear plants, and numerous field and administrative offices. In the past six months two employees have been electrocuted and a third worker was fatally injured while operating a fork lift.

The safety program is structured as a line function within each department (i.e., lineman, construction workers, office workers, etc.). Depending on the size of a district, a local safety and training coordinator administers the safety program in one or more districts. Assisting the safety and training coordinators, management and supervisory personnel implement the safety program on a collateral-duty basis. Each department conducts its own safety inspections and audits. Training and safety councils are also structured along departmental lines. The company produces and distributes to each employee a written safety manual. The Chief Executive Officer establishes annual goals for the corporation. Of the 11 goals established for 1986, two are safety related. The two corporate safety goals are: 1) no more than one lost work day injury per 1,000,000 hours of work, and 2) no more than 3.5 vehicular accidents per 1,000,000 miles driven. Another corporate goal is to have no more than 38 outage minutes per customer from transmission line outages.

Synopsis of Events:

The victim (a meter technician) reported to work at 8:00 a.m. on the day of the accident. Job duties for a meter technician consist of the construction, maintenance, and repair of electric meters. The victim performed this job for 20 years, his entire work life. In July, 1982, he attended a seven week basic lineman training course which qualified him as a lineman technician. As such the victim was permitted to climb poles and work with electrical conductors. During his regular shift the victim would work as a meter technician; however, during unplanned outages he worked as a lineman technician restoring electrical service. On the day before the accident, the victim worked more than 14 hours, finishing work at 11:45 p.m. Upon completion of his regular shift the day of the accident, he was asked to work overtime to restore electrical service to a residential customer. The victim had completed two hours of overtime when the accident occurred.

At 5:00 p.m. the victim arrived at the site and discovered a tree limb had fallen across a power line. The limb had detached two conductors (120 V each) and the neutral wire from the utility pole. The three wires were entangled. The neutral wire was severed; the two conductors were energized. After removing the tree limb from the conductors, the victim climbed the pole and attempted to reconnect the neutral and re-attach all three wires to the pole. In order to re-attach the wires to the pole he cut the electrical conductors on the outside of previous splices, attached a rope to the three conductors, fished the rope through a block and tackle, and attached the rope to the bumper of his utility truck. The victim then moved the utility truck until all the slack in the conductors was removed between the two utility poles (a span of approximately 130 feet). The victim then cut several tree limbs near the conductors and reclimbed the utility pole wearing his insulated gloves, hard hat, and safety glasses.

The victim positioned himself slightly above a television cable (approximately 30 inches below the power lines). He then reached to his right and pulled the three conductors toward himself.

While he was pulling the conductors, one of the previous splices (“V” shaped) caught on the cuff of the victim’s left glove and pulled the cuff down. The conductor contacted the victim’s forearm near his wrist.

The victim fell backwards with his climbing belt holding him upside down at the top of the pole. His left foot was wedged between the telephone and television cables. A nearby resident, who heard the noise, telephoned the Emergency Medical Service (EMS). The EMS was dispatched from a nearby hospital and was at the scene within three minutes (five minutes after the victim made contact with the electrical conductor). EMS personnel climbed the utility pole and determined that the victim did not have a pulse and was not breathing. The electric company’s aerial bucket arrived at the accident site within 30 minutes. Company employees removed the victim from the pole. The local medical examiner examined the body and pronounced the victim dead at the scene.

Cause of Death:

The coroner determined that the cause of death was due to electrocution.

Recommendations/Discussion:

Recommendation #1: A comprehensive evaluation of the employer’s safety program (from corporate level to field level) should be undertaken by an outside organization.

Discussion: This accident represents the second electrocution of a worker within six months and the third employee fatality during that time period involving the same employer. Injuries that are required to be logged on OSHA Form No. 200 appear to be inaccurate and intervention strategies are incomplete. The firm should retain a consultant knowledgeable in utility safety, who can identify strengths and weaknesses of the corporate safety program, and submit recommendations on how to improve the safety program.

Recommendation #2: Employees should request assistance when the task assigned cannot be completed safely alone.

Discussion: The employer's safety manual suggests that workers who find themselves in a task requiring more than one worker should call for assistance. The task the victim was asked to do could not have been done safely by one person.

Recommendation #3: The company should review its internal policies concerning the assignment of overtime.

Discussion: The victim was a distribution meter technician. The only way the victim could receive overtime was to work as a lineman technician. Employees should not be permitted to work overtime and required to perform hazardous tasks (such as those performed by a lineman technician) when these assignments are not part of their normal duties.

Recommendation #4: Employees should be assigned to perform tasks for which they have been adequately trained and are qualified to perform.

Discussion: The victim completed the lineman technician training course; however, he did not use this training on a daily basis. Employees (particularly those working in hazardous occupations) should only be assigned tasks that they have demonstrated that they can perform safely. Training must be followed up with on-the-job supervision and guidance and periodically reinforced.

Recommendation #5: Employers should provide adequate supervision to employees that are not journeyman level.

Discussion: The victim was assigned lineman technician duties on an overtime basis only. This employee could not be as proficient as an employee who performs these duties on a daily basis and should not have been considered capable of independent assignments. This employee should have been assigned tasks that were commensurate with his abilities and should have been adequately supervised.

Recommendation #6: Utility right-of-ways should be routinely inspected and hazardous conditions such as tree growth around power lines should be reported and corrected.

Discussion: The reason that the victim was dispatched to this site was because the power line had been damaged by tree limbs. This would be an obvious source of system damage and utilities should routinely inspect right-of-ways in an effort to minimize this type of damage.

Recommendation #7: All equipment necessary to assure the safety of personnel must be maintained operational at all times.

Discussion: The utility has a two-way radio in each company vehicle. One of the reasons these radios are supplied is to furnish a communications link during emergencies, etc. The radio in the victim's truck was inoperative. This may have contributed to the fatality in two ways: (1) he could not call for the assistance necessary to complete this task safely and (2) emergency response was delayed.

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Last Reviewed: November 18, 2015