



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Equipment Operator/Lineman Electrocuted

FACE 88-47

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 12, 1988, a 47-year-old male equipment operator/lineman died when the wooden crossarm on a utility pole failed, dropping energized electrical lines onto him.

Contacts/Activities:

State officials notified DSR of this fatality and requested technical assistance. A research safety specialist discussed this incident with state officials and on September 29, 1988, met with company representatives, investigated the incident, and photographed the incident site.

Overview of Employer's Safety Program:

The employer, a power line construction company with 12 employees, has been in operation for 32 years without a serious incident. The company has written safety policies and procedures and safety meetings are held periodically with all employees. The victim had worked for the company for 8 years.

Synopsis of Events:

The victim was a member of a 6-man crew installing a new electric distribution system to replace an existing system in a rural area. The victim, a qualified journeyman lineman, functioned as both an equipment operator and a lineman for the crew.

The existing 7200-volt system consisted of three conductors installed on wooden crossarms. The power lines were 29 feet above the ground at the utility poles, which were located at 300-foot intervals. The power line right-of-way was adjacent to and parallel with a rural road.

To obtain clearance for the installation of new poles and conductors, the existing poles were leaned over away from the road. The pole where the incident occurred had both a transformer and telephone leads for a residence attached so it was not practical to lean the pole over. Instead, a fiberglass "hot arm" (a 6-foot-long, 2 1/2-inch-diameter extension arm) was attached to the wooden crossarm. Two of the three energized conductors were then moved to this hot arm; the third was relocated on the wooden crossarm to the insulator nearest the hot arm. This relocation of energized conductors was completed two weeks prior to the incident. This movement, along with the leaning of the adjacent poles, left the power line right-of-way clear for the crew to install new poles and conductors.

On the day of the incident the crew had installed the new poles and conductors and were in the process of switching the electric service over to the new system. A pole for this new service had been installed approximately 20 feet from the pole with the transformer. The transformer was to be removed from the existing pole and installed on the new pole, at which time electrical power for the residence would be switched to the new service.

The victim and one co-worker were standing near the pole from which the transformer was being removed. The transformer was to be lowered to the ground and the two men were to carry it to the new pole for installation. As the transformer was lifted from the old pole, the wooden crossarm supporting the hot arm and the live conductors failed, dropping the energized lines onto the victim.

When the victim was struck by the energized lines, his body provided a path to ground, and he fell with the wires across his body. His co-workers, using insulated equipment, immediately moved the wires off the victim and began cardiopulmonary resuscitation (CPR). The local emergency medical service (EMS) squad was summoned and arrived on the scene within 5 minutes. The EMS personnel continued administering CPR while enroute to the local hospital, but the victim was pronounced dead on arrival.

Cause of Death:

The coroner listed the cause of death as accidental electrocution.

Recommendations/Discussion

Recommendation #1: Supervisors should ensure that workers understand the hazards they routinely encounter in the workplace.

Discussion: In this incident the worker was standing directly under energized power lines. If he had been standing to the side with his co-workers, his death would not have occurred. The employee had been engaged in similar work on numerous occasions without incident and apparently did not recognize the potential for injury or death from working on the ground beneath energized lines. A verbal reminder of the hazards posed by this practice might have prevented the incident.

Recommendation #2: Standard company practices should call for workers not actually engaged in a specific work task to remain a safe distance from the actual worksite until their presence is required.

Discussion: The victim and his co-worker were observing other workers when the incident occurred. Their assigned work task was not to begin until the transformer had been lowered to the ground. If they had been required by company policy to remain a safe distance from the worksite until their services were required, this incident would not have occurred.

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