



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Electrician Electrocuted After Contacting Energized Conductor While Working From the Bucket of an Aerial Lift Truck—Virginia

FACE 92-25

SUMMARY

A 46-year-old male electrician (the victim) was electrocuted after he contacted an energized powerline while working from the bucket of an aerial lift truck. The victim was part of a two-man crew assigned to replace 12 fused electrical cutout switches located on utility poles at a housing project. The switches were located on the crossarms of the utility poles between the transformers and the powerline phases. Five switches had been replaced and work was in progress on the sixth switch. The victim, without wearing any personal protective equipment, and without covering the powerlines with insulating blankets or line sleeves, removed one of the bolts securing the switch to the crossarm. In his attempt either to remove the second bolt securing the switch or to reposition the bucket, the victim's left upper arm contacted the powerline. Electrical current traveled through the victim's left shoulder and exited his body through the right forearm which was in contact with the grounded bucket controller, electrocuting the victim. NIOSH investigators concluded that to prevent future similar occurrences, employers should:

- **require that workers wear appropriate personal protective equipment when they are exposed to hazardous conditions and ensure that energized powerlines are insulated or guarded before work is performed on or near them**
- **develop and implement safety programs designed to enable workers to recognize and avoid hazards, especially electrical hazards**

INTRODUCTION

On April 24, 1992, a 46-year-old electrician was electrocuted when he contacted an energized powerline while working from the bucket of an aerial lift truck. On August 21, 1992, officials of the Virginia Occupational Safety and Health Administration (VAOSHA) notified the Division of Safety Research (DSR) of this fatality, and requested technical assistance. On August 27, 1992, a DSR safety specialist traveled to the incident site to conduct an investigation. The investigator reviewed the incident with the company owner and the VAOSHA compliance officer assigned to the case. Photographs of the incident site, and copies of the medical examiner and police reports were obtained during the investigation.

The employer in this incident was an electrical contracting company that had been in operation for 17 years and employed 10 workers, all of whom were electricians. The company had no written safety or training programs. The victim had worked for the company for 17 years, and this incident was the first fatality the company had experienced.

INVESTIGATION

The employer had been contracted by a local redevelopment and housing authority to replace 12 fused electrical cutout switches at a housing project. The switches were located on the crossarms of the utility poles between the transformers and the two-phase 7,620-volt (phase to ground) energized powerlines. Workers had installed five switches the day before and had been at the site 1 hour on the day when the incident occurred.

On the morning of the incident, two workers (the victim and his co-worker), arrived at the work site to continue replacing switches. Five switches had been replaced the day before and work was to be performed on the sixth switch. It was determined that the victim would work from the bucket of the aerial lift truck (a double bucket Pitman Uni/dyne aerial lift mounted on a 1982 GMC Truck) while he replaced the switches and the co-worker would remain on the ground performing other tasks. The victim positioned himself in the bucket and maneuvered the bucket adjacent to the powerline in proximity to the switch. He used a "hot stick" to disconnect the jumper wire from the switch to the powerline, stopping the flow of electricity from the powerline to the switch and transformer. Without donning personal protective equipment (PPE) or covering the powerlines with insulating line sleeves or blankets, he removed one of the bolts securing the switch to the crossarm as the co-worker watched from the ground. At that time the company owner arrived and began a conversation with the co-worker. As the victim either began to remove another bolt or tried to reposition the bucket, he contacted the powerline (Figure). While the owner and co-worker were talking, they heard an arcing and popping sound, and looked up to see the victim slump down into the bucket. The company owner immediately jumped onto the truck and used the controls mounted on the pedestal to lower the bucket while the co-worker called 911 for assistance. The paramedics arrived within 6 minutes and determined the victim had died. The medical examiner was notified and he directed the paramedics to transport the body to a local mortuary.

CAUSE OF DEATH

The medical examiner's report listed the cause of death as electrocution.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should require that workers wear appropriate personal protective equipment when they are exposed to hazardous conditions and ensure that energized powerlines are insulated or guarded before work is performed on or near them.

Discussion: 29 CFR 1926.28 (a) states "The employer is responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where this part indicates the need for using such equipment to reduce the hazards to the employees." Also, 29 CFR 1926.950 (c)(1)(ii) states "The energized part is insulated or guarded from him and any other conductive object at a different potential." Work was being performed from an aerial lift truck bucket near energized, unguarded or insulated powerlines and appropriate PPE was not being worn. The rubber gloves, sleeves, and line hoses used for this type of work were later found in the aerial bucket and bins of the truck.

Recommendation #2: Employers should develop and implement safety programs designed to enable workers to recognize and avoid hazards, especially electrical hazards.

Discussion: The danger of overhead powerlines appears to be obvious; however, contact with overhead powerlines and the subsequent occupationally-related fatalities continue. OSHA Standard 29 CFR 1926.21(b)(2) states that "The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury." Employers should develop and implement comprehensive safety programs implemented with particular emphasis on detailed safety procedures specific for all tasks and job categories. Employers should also provide employees with adequate training to ensure that they can recognize potential hazardous exposures and are familiar with the company's safety program and procedures. Evidence suggests that the worker, although an experienced electrician, elected to work near energized overhead powerlines without using PPE and without insulating or guarding the powerlines.

REFERENCES

Office of the Federal Register: Code of Federal Regulations, Labor 29 Part 1926. pp. 20-21, 311. July 1, 1989.

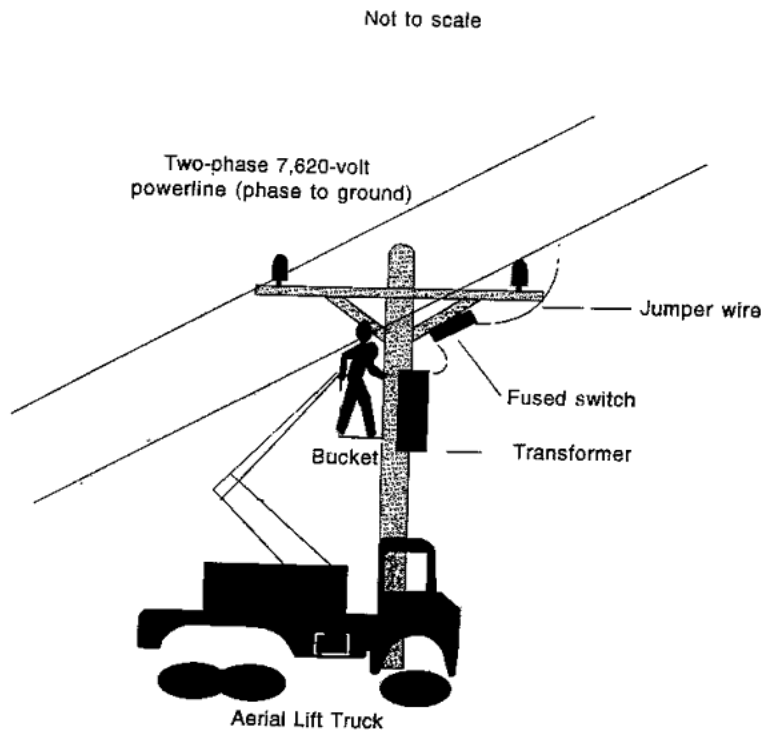


Figure. Worker Contacting Overhead Powerline

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