

FACE 90-09

Painter Electrocuted while Repositioning an Aluminum Extension Ladder in Virginia

SUMMARY

A painter was electrocuted and his co-worker injured, when a portable aluminum extension ladder contacted a 7,200-volt powerline. This incident occurred as the two workers were painting a two-story aluminum-sided house. The powerline was located parallel to, and approximately 10 feet from, one side of the house. The powerline was 22 feet off the ground. The victim was using a 30-foot aluminum extension ladder to paint the upper part of the house, while his co-worker was using a stepladder to paint the window trim on the first floor. The victim had progressed to a point where repositioning the ladder was necessary to continue painting. He descended the ladder, placed the paint brush and bucket on the ground, and proceeded to move the ladder. The ladder tipped backwards and contacted the powerline. The current passed through the ladder and victim to ground while he was still in contact with the energized ladder. NIOSH investigators concluded that, in order to prevent future similar occurrences, employers and employees should:

- use ladders made of non-conductive materials when working near energized powerlines
- contact the local electric utility company for assistance in de-energizing or sleeving powerlines if work is to be done near energized powerlines
- develop a safety program designed to recognize and avoid hazards (e.g., overhead electrical powerlines)
- conduct initial jobsite survey to identify all hazards associated with the specific jobsite.

INTRODUCTION

On October 16, 1989, a 24-year-old male painter was electrocuted when a portable aluminum extension ladder he was using contacted a 7,200-volt powerline. On October 25, 1989, officials of the Virginia Occupational Safety and Health Administration notified the Division of Safety Research (DSR), of this fatality, and requested technical assistance. On November 6-7, 1989, a safety specialist from DSR conducted an investigation of this incident. The investigator reviewed the incident with the OSHA compliance officer assigned to the case, EMS personnel, police personnel, and an electric

utility representative. Photographs of the incident site and various reports of the incident were obtained.

The employer in this incident is a small painting contractor that has been in operation for 5 years. The company employs three full-time employees. The company had no written safety program and provides no safety training beyond verbal instructions to work safely. Also, the victim worked for the employer 4 weeks, and had only been in this country for 6 weeks and could not read or speak English.

INVESTIGATION

The company had been contracted to paint a two-story aluminum-sided house. Two employees had been working at the jobsite for 3 days prior to the incident. The employees were using a portable 30-foot aluminum extension ladder and two aluminum stepladders to paint the upper part of the house. A 7,200-volt overhead powerline is located parallel to, and approximately 10 feet from, one side of the house. The powerline is 22 feet off the ground.

On the day of the incident, the victim was painting on the side of the house nearest the powerline, while his co-worker was working around the corner of the house. The victim was working from the extension ladder painting window trim and soffit and fascia on the second floor. The co-worker was using a stepladder to paint the trim around the windows on the first floor. The victim had progressed to a point where repositioning the ladder was necessary to continue painting. The victim descended the ladder, placed the paint brush and bucket on the ground, and proceeded to move the ladder. The ladder, which had been previously raised to a height of approximately 24 feet 6 inches, tipped backwards and contacted the powerline (Figure). The ladder in contact with the powerline provided a path for the electrical current through the victim to ground. The co-worker, confused as to what had happened, rushed to aid the victim and also contacted the ladder which was still in contact with the powerline. The co-worker, victim, and ladder were all knocked to the ground. An off-duty policeman saw the incident, and radioed for help. Prior to the arrival of an emergency medical service (EMS) vehicle, the policeman checked for injuries. Noting that the victim had stopped breathing, the policeman began administering cardiopulmonary resuscitation (CPR). An EMS vehicle arrived in 4 minutes and EMS personnel attended to the two workers. A second EMS vehicle arrived 2 minutes later. The victim received advanced cardiac life support, and was then transported to the hospital, where he was pronounced dead on arrival. The co-worker was treated for burns, transported to the hospital, and released the following day.

CAUSE OF DEATH

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

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Ladders used near energized powerlines should be made of nonconductive materials.

Discussion: OSHA Standard 1926.450(a)(11) states that "portable metal ladders shall not be used for electrical work or where they may contact electrical conductors." The portable 30-foot aluminum extension ladder used in this incident was conductive. If a ladder made of nonconductive material had been used in this case, the fatality might have been prevented.

Recommendation 2: If work is to be done near energized overhead powerlines, the employer should notify the local electric utility company for assistance.

Discussion: If work is to be done near energized overhead powerlines, particularly work involving ladders, scaffolds, boomed vehicles, large pieces of conductive materials, or long-handled tools, the employer should notify the local electric utility company. The utility company can de-energize the powerlines, insulate the powerlines with insulating blankets or hoses, or advise employers and employees of procedures to avoid contact. Most electric utility companies will consult with employers on matters pertaining to worker safety.

Recommendation #3: The employer should develop a safety program designed to recognize and avoid hazards (e.g., overhead electrical powerlines).

Discussion: The danger of overhead powerlines appears to be obvious; however, deaths resulting from contact with overhead powerlines continue to occur. OSHA Standard 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." The company does not provide training in safe work procedures and does not have written safety rules. The tasks performed by workers should be evaluated and the hazards identified. A safety program should be developed which addresses these hazards.

[Note: The victim had only been in this country for 6 weeks prior to the incident and could not read or speak English. Therefore, the safety program should have provisions ensuring that non-English-reading/-speaking employees fully understand the safety program.]

Recommendation #4: The employer should conduct an initial jobsite survey to identify all hazards associated with the specific jobsite.

Discussion: Two characteristics of this jobsite combined to produce a very serious hazard: 1) energized powerlines located 10 feet away from the house being painted, and 2) the use of a portable 30-foot aluminum extension ladder. Recognition of this potential hazard through a jobsite survey may have prompted the employer to contact the local utility company to have the powerlines covered with insulating hoses or blankets, or provide the employees with non-conductive ladders. Employers should conduct jobsite surveys, identify all hazards, and apply appropriate preventive measures prior to the start of any work.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor 29 Part 1926. p.171. July 1, 1989.
2. Office of the Federal Register: Code of Federal Regulations, Labor 29 Part 1926. p.20. July 1, 1989.

An employer should conduct a jobsite survey prior to initiating work at each site. Hazards, such as potential contact between an aluminum ladder and an overhead powerline depicted below, can be identified and controlled.

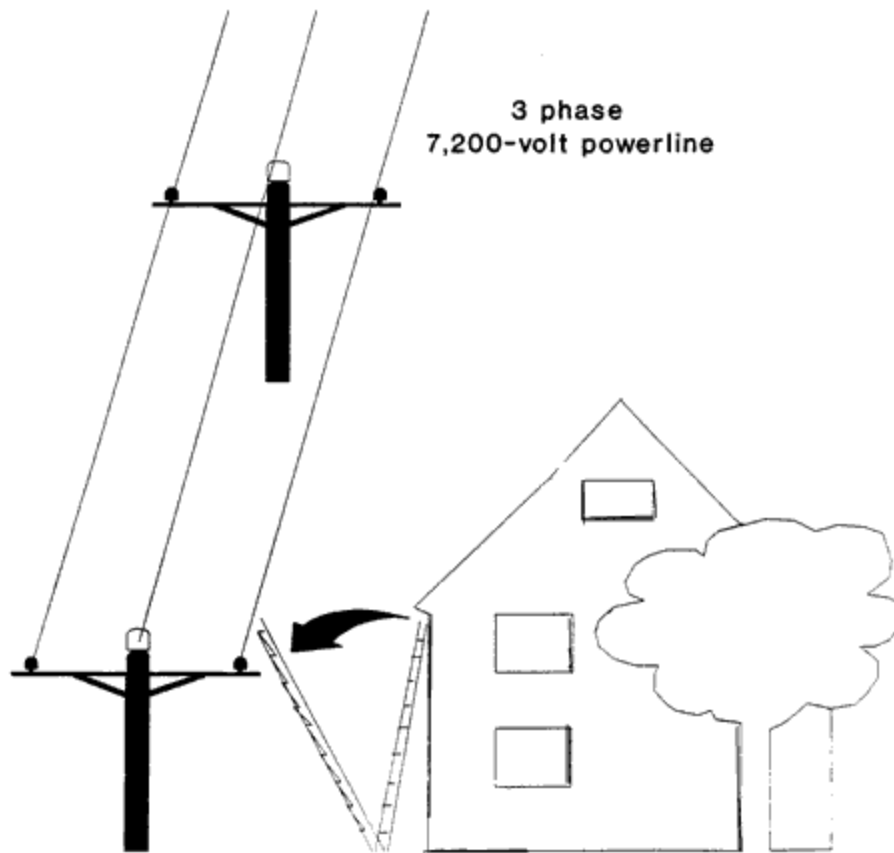


Figure.