



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research



Two Workers Electrocuted in Tennessee

FACE 86-39

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 17, 1986, two workers (a painter and a carpenter) were electrocuted when a scaffold they were moving contacted a high voltage line. The scaffold and the power line were both approximately 25 feet high.

Contacts/Activities

Officials of the Occupational Safety and Health Administration for the State of Tennessee notified the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR) of this fatality and requested technical assistance. This case will be included in the Fatal Accident Circumstances and Epidemiology (FACE) Project. On July 30, 1986, a DSR medical officer conducted a site visit and met with representatives of the company which employed the victims. Interviews were conducted with co-workers and the owner of the company employing the victims; no one witnessed the incident. A surrogate interview was conducted to obtain personal characteristics of one of the victims. The accident site was visited with a Tennessee OSHA compliance officer and photographs were taken.

Background/Overview of Employer's Safety Program

The victims worked for a painting contractor, who employs between two and seven workers (depending on available work) as "independent subcontractors." There is no written safety policy and safety meetings are not held. The company's safety program consists of verbal hazard identification and instruction by the company's owner, who personally visits each job site on a regular basis. Several witnesses agreed that the owner/manager had cautioned both men to be careful to avoid the power lines when moving the scaffold.

Synopsis of Events

On June 17, 1986, four workmen were scraping and painting church windows. Of the 78 windows in the church, only four windows remained to be painted. The temperature at the time of the accident was above 90 degrees Fahrenheit and there was no noticeable wind. The sky was clear and the ground was dry.

The two victims completed their work on the North side and began moving the scaffold around the building, preparing to begin painting windows on the East side. The scaffold consisted of five joined five-foot sections (approximately 25 feet high) on rubber casters. One worker was a painter who had been with the company since November 1985, and the other was a carpenter who was working temporarily for the company while between jobs. The carpenter had worked for the company only eight days, but he did have extensive experience constructing and using scaffolds.

The workers moved the scaffold in an easterly direction (see [Figure](#), Position A), then turned to a southerly direction, circling around a tree which was close to the building. They passed near or under a 12,000 volt line which was approximately 30 feet in elevation (Position B). They continued circling the tree, rotating the scaffold and pushing it towards the East face of the building. The power line changed direction at the pole and the elevation of the line dropped about five feet to approximately 25 feet. The scaffold contacted one phase of the 12,000 volt line (Position C), completing a path to ground (7200 volts phase-to-ground) through the two men and electrocuting them. The ground fault relay of the power company, set at 1750 amps, did not open the circuit breaker. This probably occurred because the casters were made of rubber and the current through the two victims did not exceed 1750 amps. The line was not de-energized until representatives of the power company came and physically removed the jumpers which ran from the North/South lines to the East/West lines.

The victims were in contact with electrical energy for approximately 12 minutes. This prolonged contact caused extensive thermal damage and no resuscitative efforts could be undertaken when the victims were finally removed from contact with the source of electrical energy.

Cause of Death

The medical examiner ruled the cause of death for both men to be accidental electrocution.

Recommendations/Discussion

Recommendation #1: A specific plan of action which ensures safety should be incorporated into job planning when there is a potential risk of contacting electrical energy.

Discussion: The planned move of the scaffold was intrinsically hazardous. While the owner cautioned the men about the high voltage lines, no specific plan to perform the work safely was formulated. Such a plan might have included removing the top section of the scaffold during the move, or trimming tree branches so the scaffold could be kept well away from high voltage lines.

Recommendation #2: When moving a scaffold in the vicinity of electrical lines, an observer without other duties should be available to help maintain a safe distance between the scaffold and the electrical lines.

Discussion: The midday sun may have affected the victims' view when they looked up at the high voltage lines running East/West and they may have assumed that these lines were the same elevation as those running North/South. An independent observer would have been free to choose a different vantage point and aid in maintaining separation between the scaffold and the high voltage lines.

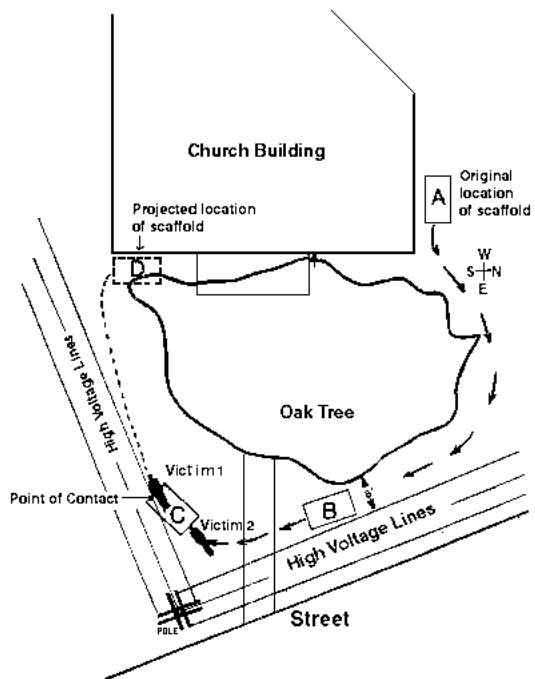


Figure.

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