



The National Institute for Occupational Safety and Health (NIOSH)

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through safety and health research



# Worker Electrocuted By 7200 Volt Power Line in North Carolina

FACE 85-18

## 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 electrically-related and confined space fatalities. By scientifically collecting data from a sample of fatal accidents, it will be possible to identify and rank factors which influence the risk of fatal injury for selected employees.

The accident occurred on April 30, 1985, at 3:30 p.m., as workers of an electrical construction company were removing a temporary pole structure which was used to secure a 7200 volt power line while new 150,000 volt lines were being installed. When the 7200 volt line was released from the temporary structure, an arc created by a loose tie line caused the power line to burn through and fall to the ground, electrocuting a workman on the ground.

## Contacts/Activities

The North Carolina Department of Labor, Division of Occupational Health and Safety, requested technical assistance from NIOSH/DSR and this case has been included in the Fatal Accident Circumstances and Epidemiology (FACE) Project. On May 8 and 9, 1985, the DSR research team, which consisted of a research industrial hygienist and a safety specialist, visited the accident site, met with the safety director of the electrical construction company, interviewed workmen who were on site at the time of the accident, and interviewed the next-of-kin.

## Synopsis of Events

An electrical construction company was to install a new high voltage system (150,000 volt transmission lines) for service upgrading. The new high voltage lines (running north and south) were approximately 30 feet above the existing 7200 volt lines (running east and west). In the event of an accident, i.e., one of the 150,000 volt lines falling across the 7200 volt lines, a temporary structure was constructed. This temporary structure consisted of two wood utility poles installed vertically (approximately 20 feet apart), and one pole across the top horizontally, forming an inverted "U". The 7200 volt power line was secured to the left vertical pole. This was accomplished by pulling the line down a few inches (for tension) and using a tie line to secure it to the top of an insulator.

The accident occurred when the temporary structure was to be removed. A workman was near the top of the temporary structure in a hydraulic lift bucket and was unwinding the tie line that secured the 7200 volt power line to the insulator when the 7200 volt line (under tension) jerked upward. This upward movement caused the tie line to whip around the left vertical support pole, contacting a ground line that was stapled to the pole (from a previous job and not required on this job). Contact with the ground line created an arc and burned through the 7200 volt line. The power line fell to the ground landing on a pole trailer that was hitched to a utility truck. A workman between the trailer and the truck was in contact with a steel anchor rod that protruded from the rear of the truck. This workman was electrocuted.

## Conclusions/Recommendations

### 1. Employers should provide adequate training to supervisors and employees in the recognition, appreciation, and avoidance of safety hazards and should assure that employees are proficient in assigned tasks.

**Discussion:** Adequately trained employees should have recognized the hazards associated with this task and could have taken several preventative actions. Removal of the ground wire from the support pole, tying the 7200 volt power line to the bottom of the insulator instead of to the top, de-energizing the 7200 volt line, the use of insulating materials on the 7200 volt power line (sleeves or rubber blankets), or the maintenance of a clear zone under the work area could have prevented this accident. The employees performing this task did not appear to be adequately trained and failed to recognize the hazards associated with this task.

### 2. Management and first-line supervisory personnel must be responsible for job site safety.

**Discussion:** Supervisory personnel permitted a ground wire to be installed within a few inches of a 7200 volt power line and did not take adequate steps to assure the safety of the employees at the job site (i.e., use of insulating materials, maintenance of a clear zone, etc.).

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