The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

# Driller Electrocuted in Virginia

FACE 87-52

## 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 13, 1987, a 49-year-old driller was electrocuted when the boom of the drilling machine he was operating contacted a 34,500 volt overhead powerline.

## Contacts/Activities:

Officials of the Occupational Safety and Health Program for the Commonwealth of Virginia notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. On July 14, 1987, a safety specialist met with the employer, conducted a site visit, interviewed comparison workers and a surrogate for the victim, and photographed the accident site.

## Overview of Employer's Safety Program:

The victim was employed by a construction company that constructs and paves highways. The company employs 153 full-time people. The company has a written safety program and conducts weekly safety meetings in the field. Although the majority of employees are hired for their experience, training is provided on-the-job. The company controller is assigned responsibility for on-the-job safety and health on a collateral duty basis.

## Synopsis of Events:

There were no eye witnesses to this incident. The following scenario was developed from discussions with the owner and controller of the company, co-workers, the state OSHA compliance officer, and an investigation of the accident site.

The company had been contracted to construct and pave a two-lane highway for the Commonwealth of Virginia. The construction had been in progress for several months prior to the incident.

On June 13, 1987, the victim (a driller) was in the process of setting up a drilling machine to drill holes that would hold explosives (for blasting purposes) to be used in the removing of overburden. The victim was operating a hydraulic drilling machine equipped with a 27 foot 4 inch boom capable of reaching a vertical height of approximately 32 feet. The drilling machine can be operated from on the machine or from ground level. Also, a three phase 34,500 volt overhead power line was located directly (29 feet from ground level) above the area to be drilled.

Prior to the incident on the morning of June 13, 1987, the field foreman told the victim to be careful since overhead power lines were present. The field foreman then left the area and the driller began setting up the drilling machine. The victim was standing on the ground, which was wet from the rain, operating the controls for the placement of the boom. The boom was extended and being positioned vertically when the top section contacted the bottom conductor of the overhead power line. The victim provided a path to ground for the electrical current and was electrocuted.

A local police officer was on the scene approximately four minutes after the incident and performed CPR until the rescue squad arrived. The rescue squad transported the victim to a nearby hospital where he was pronounced dead.

## Cause of Death:

The cause of death was listed as electrocution. Exit burns were noted on the victim's left foot, but no entrance burns were observed.

## Recommendations/Discussion

**Recommendation #1: Employers should comply with OSHA regulations concerning the operation of boomed-vehicles near electric power lines.**

**Discussion:** Although the OSHA regulation governing the operation of boomed vehicles near electric power lines does not strictly apply to drilling machines, a safety conscious employer should voluntarily comply with OSHA standard 1926.550(a)(15) which requires that the minimum clearance between electrical lines rated 50 kV or below and any part of the crane or load (boom) shall be ten feet, unless the electrical lines have been "de-energized and visibly grounded" or insulating barriers have been erected "to prevent physical contact with the lines, equipment or machines." Obviously, complying with this standard will often involve cooperation with the power company.

**Recommendation #2: Operating controls for boomed vehicles, when designed for use from ground level, should insulate the operator from the vehicle.**

**Discussion:** The victim had approximately 30 years' experience as a drilling machine operator and had been made aware of the presence of overhead power lines only moments before the incident by the field foreman. Even with this experience and warning the fatal accident occurred. It is apparent that the regulations concerning cranes (boomed-vehicles) and overhead power lines are adequate when followed; however, boomed equipment, when operated from ground level, should have electrically insulated operating controls, so that a momentary error in judgment does not result in the loss of life.

**Recommendation #3: Additional personnel should be used to observe clearances when equipment is being operated in the vicinity of electrical power lines, especially when visibility is impaired or obstructed.**

**Discussion:** The location of the drilling machine (directly beneath the power line) and weather conditions (overcast and raining) may have interfered with the operator's perception of the distance to the power line. Employers should comply with, where applicable, 29 CFR 1926.550(a)(15)(IV) which requires that a person be designated to observe clearance of the equipment and to give timely warning for "all" operations where it is difficult for the operator to maintain desired clearances by visual means.

Return to In-house FACE reports

Last Reviewed: November 18, 2015