The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

37-Year-Old Lineman Electrocuted in Georgia

FACE 86-40

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, a 37-year-old lineman was electrocuted while reaching overhead with a hot-stick to place a jumper line on one phase of a three-phase 7200 VAC primary line. In his attempt to re-energize the de-energized line it is assumed his hand contacted the barrel of an energized fuse cut-out causing electrocution.

Contacts/Activities

Officials of the Occupational Safety and Health Program for the State of Georgia notified DSR of this fatality and requested technical assistance. This case has been included in the FACE Project. A DSR researcher conducted an evaluation of this case and included interviews with the safety director of the power company, a surrogate for the victim, and comparison workers. Discussions were held with the OSHA Compliance Officer and the attending medical examiner. The medical examiner's autopsy report was obtained. The safety director of the power company and the DSR researcher visited the accident site. Photographs were taken of the accident site and the equipment being used by the victim when the accident occurred.

Background/Overview of Employer's Safety Program

The rural utility company has been in operation since 1939 and under the same management for all 47 years. The company has a written operations safety manual that is given to all new employees. This manual states that it is "the employees' responsibility to become familiar with all the contents of the manual and to comply with all the rules and regulations while at work with the company." Training of new employees is performed on-the-job by a foreman or experienced employee. The owners and safety personnel appear to be conscientious and willing to provide a safe work environment. All protective equipment is inspected regularly and all insulative rubber gloves are given an electrical test at least every 60 days with faulty gloves being destroyed. The utility company provides hard hats, rubber and leather gloves, rubber blankets, hot sticks, and voltage testing equipment. Employees are responsible for providing safety belts and pole climbing gaffs.

Synopsis of Events

On the evening of June 17, 1986, eight utility workers were working overtime to repair a 7200 VAC underground distribution line. Before the underground line could be repaired the crew foreman de-energized the line by removing a jumper and opening a fuse cut-out on a pole one mile west of the work site.

After the underground repairs were made, four men were to re-energize the line by replacing the jumper and closing the fuse cut-out. The victim had climbed the pole and attempted to place a jumper on the main line using an eight foot long hot stick. The victim expressed to the workers on the ground that he felt the jumper was too short. When the victim tried to place the jumper on the main line he apparently made incidental contact with the 7200 VAC barrel of the cut-out (see Figure 1).

Even though the victim was unconscious he did not fall off of the pole because he was being supported by a safety belt and steel climbing gaffs which he had embedded into the pole. Workers summoned their foreman who arrived at the accident site approximately two minutes later. He administered CPR to the victim at the top of the pole for approximately eight to ten minutes. Pole top rescue techniques, utilizing a block and tackle (cable and winch), were used to lower the victim to the ground. Emergency medical personnel arrived approximately 20 minutes after the accident occurred and transported the victim to the local hospital. The victim was pronounced dead at the accident site.

At the time of the accident the only protective equipment being worn by the lineman was a pair of non-insulative leather gloves. These leather gloves are to be worn over insulative rubber gloves at all times to protect the rubber gloves. Company regulations require that rubber gloves with leather protectors must be worn by all lineman when climbing or working on any pole to which energized conductors are attached.

Cause of Death

The autopsy report listed the cause of death as electrocution due to contact with 7200 VAC. Contact with electrical energy was with the back of the left hand with current passing through his body exiting through the victim's left foot where he was wearing steel climbing gaffs.

Recommendations/Discussion

Recommendation #1: The employer should enforce existing regulations concerning the use of safety equipment and safe work practices.

Discussion: An Operations Safety Manual is distributed to all new employees by the rural utility company. Guidelines in this manual should be practiced by employees and enforced by supervisors. This manual states that, "Foremen at all times are responsible for the execution of the work in a safe manner and for the job performance of all employees under their direction."

Recommendation #2: When working near a high voltage line workers should wear all appropriate personal protective equipment.

Discussion: When the accident occurred, the victim was only wearing a pair of leather gloves which are normally worn over rubber gloves to prevent tears and punctures that would weaken the insulative properties of the rubber gloves. The operators safety manual states that "leather protectors shall be worn over rubber gloves at all times" and that "rubber gloves with leather protectors must be worn by all linemen when climbing or working on any pole to which energized conductors are attached."

Recommendation #3: All exposed high voltage conductors should be covered with rubber hoses, boots, or blankets.

Discussion: The victim did not use any insulative barriers to cover the 7200 VAC power line system. When working in close proximity to high voltage powerlines, all exposed conductors in contact distance within a work area must be covered to eliminate the occurrence of an accident.

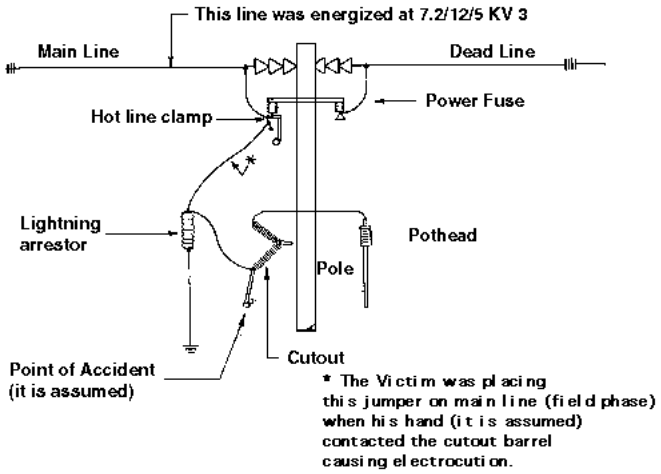

Figure 1. Profile of Accident Pole

Return to In-house FACE reports

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