The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces through safety and health research

Lead Line Mechanic Electrocuted in Maryland

FACE 86-55

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 August 11, 1986, a 39-year-old lead line mechanic was electrocuted while he replaced a fuse holder.

Contacts/Activities:

Officials of the Occupational Safety and Health Program for the State of Maryland notified DSR concerning this fatality and requested technical assistance. This case has been included in the FACE Project. A DSR safety engineer and a research industrial hygienist conducted this evaluation, which included interviews with the safety director of the power company, two comparison workers, and a witness to the incident. Discussions were held with the OSHA compliance officer and the accident site was visited. Photographs were taken of the accident site and the equipment being used by the victim when the incident occurred. A surrogate for the victim agreed to participate, but declined to do so at this time. The compliance officer's report, the autopsy report, and the report filed by the responding emergency medical service have been requested.

Background/Overview of Employer's Safety Program:

The utility company has been in operation since 1904 and currently employs over 5000 employees. A written safety manual is given to each new employee. This manual includes requirements concerning the use of personal protective equipment. Additionally, the company enforces these requirements. The company requires all lineman technicians to complete an initial training course and annually gives refresher training concerning such topics as pole top rescue. All employees are trained in CPR. The training facility for the company was very well equipped and emphasized hands-on training.

Synopsis of Events:

On Sunday, August 10, 1986, a lead line mechanic (the victim) and a groundman were contacted at home and requested to work overtime to repair damage to the electrical distribution system that was caused by a storm earlier that day. The lead line mechanic and the groundman started working at 10:00 p.m. and had completed two tasks assigned to them by 3:00

a.m. The victim and the groundman had moved to a third location and were attempting to restore power to a residential area when the accident occurred.

The lead line mechanic was working in a two-man aerial bucket without any personal protective equipment (i.e., non-conductive hard hat, insulated rubber gloves, lanyard, etc.). The workers initially identified the problem at this third location as a blown fuse. However, when the victim elevated the aerial bucket he found that the fuse holder was also damaged. The lead line mechanic removed the fuse, disconnected the energized tap (top), disconnected the de-energized tap (bottom), and removed the fuse holder. When the victim disconnected the taps, he bent them back towards the end that remained connected. He then lowered the aerial bucket and was given a replacement fuse holder by the groundman, who was standing on the platform over the cab of the truck. He then elevated the aerial bucket and installed the replacement fuse holder. After installing the fuse holder, he began to reconnect the taps starting with the de-energized tap. As he pulled the de-energized tap toward the bottom of the fuse holder with his bare hand, his head contacted the energized tap and he was electrocuted.

Because he did not have his lanyard attached the victim fell into the aerial bucket. The groundman lowered the aerial bucket and tried unsuccessfully to remove the victim. He then called for assistance on the radio in the truck. The emergency medical service responded within approximately five minutes. The two EMS personnel and the groundman tried once again unsuccessfully to remove the victim from the aerial bucket. CPR was attempted inside the aerial bucket, but it is questionable how effective this effort was. Approximately 20 minutes after the incident a fourth person arrived at the scene and the victim was removed from the aerial bucket. He was then transported to a local hospital where he was pronounced dead.

Cause of Death:

Not available when this report was prepared.

Recommendations/Discussion:

Recommendation #1: When working near a high voltage line workers should wear all appropriate personal protective equipment.

Discussion: When the accident occurred, the victim was not wearing any personal protective equipment required by the company. Employees must wear personal protective equipment when working in the vicinity of energized conductors/equipment.

Recommendation #2: Employers must enforce company requirements concerning the use of personal protective equipment.

Discussion: Utility companies must constantly enforce company requirements concerning the use of personal protective equipment. This utility has disciplined employees for not using personal protective equipment on several occasions, including one incident that involved the victim.

Recommendation #3: The lighting system that provides illumination to the work area should be re-evaluated.

Discussion: This fatality occurred at 3:00 a.m. It had been raining and all lights in the neighborhood were out because of the storm damage. The only illumination to the work area at the top of the pole was from a spot light mounted on the cab of the truck. This light was directed through the steel mesh platform located over the truck cab and according to the groundman was inadequate. DSR engineering personnel should evaluate lighting systems used on aerial buckets to determine optimal design configurations.

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