Colorado Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT:

Colorado FACE Investigation 94CO003

Foreman on Electrical Line Crew is Electrocuted when an Energized Line Contacts a Guy Wire

SUMMARY:

On January 25, 1994 a 38-year old employee of a electrical contractor was electrocuted when an energized jumper wire contacted a guy wire onto which the deceased was holding. The deceased was a foreman of the linecrew that was replacing electrical poles and rerouting electrical lines for a local rural electric association. When the incident occurred, the crew was disconnecting power lines from an old pole to allow pole replacement. The deceased had used a climbing belt and boot hooks to climb the pole; he had assisted a co-worker who was positioned in a truck-mounted insulated bucket on the opposite side of the pole. The deceased had accomplished the task for which he had ascended the pole, and was resting prior to his descent.

The pole was supported in place by two guy wires, one attached approximately four inches above the other, both wrapped around the pole on metal bands and then secured in place with metal brackets. The workers were disconnecting the remaining two segments of a single-phase 7200-volt line that joined at the pole and were connected with a "jumper wire" (an uninsulated energized wire that allows the electricity to bypass the gap in the two line segments where they attach to the pole). A "hot hoist" (a hand-operated winch and nylon strap with end clamps that are attached to each line approximately two feet away from the pole) had been installed to pull the lines toward the pole, thus releasing tension on the sections of line at the point of connection to the pole. This allows the crew to disconnect the ends of the line from the pole. When the injury occurred, one end of the line had been disconnected. This created slack in the jumper wire. From contact marks on the jumper wire and the guy wire hooks it appeared that the jumper wire contacted the guy wire bracket. The deceased was holding onto the two guy wires and provided the path for the flow of electricity between guy wires and the ground.

The Colorado Department of Health (CDH) investigator concluded that to prevent future similar occurrences, employers should:

- Ensure that high voltage electrical conductors are properly guarded when being handled.

- Ensure that employees understand that only personnel required to perform a specific task are authorized to be in that work area.

INVESTIGATIVE AUTHORITY:

The Colorado Department of Health (CDH) performs investigations of occupational fatalities under the authority of the Colorado Revised Statutes and Board of Health Regulations. CDH is required to establish and operate a program to monitor and investigate those conditions which affect public health and are preventable. The goal of the workplace investigation is to prevent work-related injuries in the future by study of the working environment, the worker, the task the worker was performing, the tools the worker was using, and the role of management in controlling how these factors interact.

This report is generated and distributed to fulfill the Department's duty to provide relevant education to the community on methods to prevent severe occupational injuries.

INVESTIGATION:

This investigation was prompted by a report to CDH from a local county coroner. CDH notified the Occupational Safety and Health Administration (OSHA) Area Office of the fatality and a joint investigation was initiated. The investigation included interviews with the company owner, safety director, and co-workers. The incident site and equipment were photographed. Reports were obtained from the county coroner and the contracting rural electric association.

The company employs fifty-eight people; employees are represented by the International Brotherhood of Electrical Workers. The company has a safety officer and a written safety program. The company has been in business for forty-five years. The deceased had worked for the company twenty-one days at the time of the incident. He was a qualified journeyman electrician. The union conducted on-the-job training and effects of the training were measured.

CAUSE OF DEATH:

The cause of death as determined by autopsy and listed on the death certificate was cardiac fibrillation/asystole as a result of

electrocution.

RECOMMENDATIONS/DISCUSSION:

Recommendation #1: Ensure that high voltage electrical conductors are properly guarded when being handled.

Discussion: In this incident, the jumper wire connecting the energized single phase conductors was not insulated. The use of line hoses or replacing the uninsulated jumper wire with an insulated wire during the changeover could have prevented the inadvertent contact that resulted in the death of a worker.

Recommendation #2: Ensure that employees understand that only personnel required to perform a specific task are authorized to be in the immediate work area.

Discussion: In this case, the deceased had completed the job he had climbed the pole to accomplish. According to company policy, only the personnel necessary for the specific operation are allowed in the immediate area of work taking place. It appeared that the deceased had no function or reason to remain on the pole at the time of the injury. The employer should reinforce training regarding this company policy and the reasons for it.

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