

Lineman Electrocuted After Contacting 7,200 Volts While Re-Routing Power Lines on A Utility Pole

DATE: March 12, 1992

SUMMARY

On September 6, 1991, a 47-year-old male power company lineman was electrocuted after making contact with a 7,200 volt power line. The incident occurred while the lineman was working to re-route power from a utility pole to underground lines. As he worked from a bucket truck, he contacted the energized line while holding a grounded metal support. NJDOH FACE investigators concluded that, in order to prevent similar incidents in the future, the following safety guidelines should be followed:

- ***Employers must insure that personal protective equipment such as insulating gloves are provided and used. Strict enforcement of company policies with regard to this equipment must be maintained by the field supervisors.***
- ***Employers should insure that all energized power lines are thoroughly insulated to prevent inadvertent contact.***
- ***Employees should not engage in activities that may distract them while working near energized lines.***

INTRODUCTION

On September 16, 1991, NJDOH FACE personnel were notified by an OSHA area compliance officer of a work-related electrocution that occurred on September 6, 1991. The following day, FACE personnel visited the site to examine and photograph the scene. Other information was derived from the OSHA file, the power company accident investigation report, and the police and medical examiner's reports.

The employer was a large electrical utility company that has been in operation for 70 years. The company employed 320 workers in the victim's division and was unionized. The company employed a full-time safety supervisor and provides a training program for employees. Power company safety rules and procedures were extensive and in writing.

The deceased was a 47-year-old male who had been working for the company for 22 years. He had been trained exclusively by the company, working through his apprenticeship and a supervised on-the-job training period. He had worked as a first class lineman for about 10 years.

INVESTIGATION

The incident occurred at a utility pole located in a residential housing development. The local utility company was involved with re-routing the existing three phase, 12,500 volt, overhead service lines to a newly installed underground cable system. The job was nearly complete and required connecting the overhead and underground lines. This was to be done at a utility pole where the underground lines would be diverted up the pole, through a riser pipe (conduit), and connected to the overhead lines.

The weather on the day of the incident was warm and clear. A crew of three (the victim, a crew chief, and a lineman's helper) was assigned to install a crossarm and riser pipe on the utility pole and to connect the underground and overhead power lines. After the crew arrived at the site and positioned the bucket truck, the victim went up in the bucket and placed insulating tap covers and blankets on the exposed conductors. The crew chief and helper remained on the ground and prepared a new crossarm for installation. Using a rope, the victim then raised the crossarm up to the bucket and installed it on the pole. At this time the crew chief noted that the victim had removed his rubber electrical gloves. Shortly after lunch, the crew chief reminded the victim to wear his rubber gloves, to which he replied "Okay Boss". The victim then returned to the bucket to resume work on the pole.

There were no witnesses to the incident. After correcting a problem with a bracket and ground wire, two other brackets were sent up to the victim by rope. He then lowered the rope back to the ground while his co-workers prepared to raise a riser pipe to him. About a minute later, the co-workers heard the sound of buzzing and arcing and looked up to see the victim's arm hanging out of the bucket. The crew chief then lowered the bucket while the helper requested an ambulance on the truck radio. As the victim was lowered to the ground, the crew chief and a passerby noted that he was only wearing his rubber sleeves and that his rubber gloves were laying over the boom control handles in the bucket. With the help of the passerby, the co-workers started cardio-pulmonary resuscitation (CPR), but had trouble due to a large amount of chewing tobacco in the victim's mouth. The local police arrived and took over CPR, and the victim was transported to the hospital by the local emergency squad. The victim was pronounced dead at the hospital emergency room.

Investigations by the power company and OSHA concluded the following: after the victim raised the brackets with the rope, he had to reach over the newly installed crossarm to get them. In doing so, he inadvertently pushed a riser tap (power line) against a cable support bracket. Although the tap was insulated with a tap cover, a crimpet connecting two pieces of wire on the tap was apparently exposed from the cover. After lowering the rope to his co-workers, the victim attempted to separate the tap with his right hand while holding the bracket with his left hand, contacted the exposed crimpet, and received a shock of 7,200 volts. The power passed from the tap into his right hand, across his chest, and through his left hand into the grounded bracket. It was speculated by a union representative that the victim may have removed his gloves to take a bite of chewing tobacco.

CAUSE OF DEATH

The county medical examiner determined the cause of death as electrocution. The victim suffered 3rd degree burns on both his hands.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers must insure that personal protective equipment such as insulating gloves are provided and used. Strict enforcement of company policies with regard to this equipment must be maintained by the field supervisors.

Discussion: The victim apparently removed his gloves before contacting the energized line, even after being reminded to wear them. The employer provides and requires the use of insulated lineman's gloves for work on lines exceeding 600 volts. The failure to wear the gloves, especially after being told to use them, indicates a lack of understanding of why this personal protective equipment is necessary. Use of this equipment is also required by the OSHA standard 29 CFR 1926.950 (c)(1)(i). It is recommended that management should re-affirm the necessity of following established safety procedures with all supervisors and workers.

Recommendation #2: Employers should insure that all energized power lines are thoroughly insulated to prevent inadvertent contact.

Discussion: In this situation, a crimpet connecting two pieces of wire on the riser tap was exposed from the insulating tap cover, exposing a section of the energized tap. It is recommended that all energized lines within reach of the worker should be thoroughly insulated to prevent inadvertent contact. If practical, insulating grounding points (such as the grounded brackets) may provide additional protection while working on energized lines.

Recommendation #3: Employees should not engage in activities that may distract them while working near energized lines.

Discussion: It was speculated that the employee may have become distracted while taking a bite of chewing tobacco and neglected to replace his rubber gloves. To prevent possible distractions, activities such as eating, drinking, smoking, and chewing tobacco should be prohibited while working on energized lines.

REFERENCES

Code of Federal Regulations 29 CFR 1926 (Construction Industry), 1990 edition. U.S. Government Printing Office, Office of the Federal Register, Washington DC, pg 312.

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