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Delivery Truck Driver Electrocuted After Truck-Mounted Boom Contacts 40,000-Volt Overhead Power Line

DATE: April 29, 1994

MN FACE Investigation 94MN01201

SUMMARY

A 23-year-old male part-time delivery truck driver (victim) was electrocuted when he stepped from the cab of a flatbed truck after its partially extended loading boom contacted a 40,000-volt overhead power line. The incident occurred while the victim and a coworker were picking up excess building materials from two locations on a construction site. While the victim drove the truck between locations, the loading boom was not fully lowered and secured. The two section boom was in a partially extended, inverted-V position with the loading fork resting on the building materials on the truck flatbed. Its elbow or hinge point was approximately 30 feet above ground while the truck was being moved between locations. As the victim drove the truck to the second location, the extended boom contacted the overhead power line. Hearing a loud bang, he stopped the truck and exited the cab to determine what had happened. He was electrocuted when he touched the ground while also contacting the metal frame of a cab-mounted ladder used to climb to the boom operating platform. MN FACE investigators concluded that, in order to reduce the likelihood of similar occurrences, the following guidelines should be followed:

- employers should ensure that booms are fully lowered and secured before boomed vehicles are moved;
- employers should ensure that adequate clearance between loading booms and overhead power lines is maintained;
- employers should ensure that boomed vehicle drivers/operators are trained in their safe operation; and
- boomed vehicle manufacturers should design interlock systems that prevent vehicles from being moved unless the boom is fully lowered and secured.

INTRODUCTION

On March 1, 1994, MN FACE was notified of an electrocution which occurred on February 28, 1994. A site investigation was conducted by MN FACE investigators on March 30, 1994. The flatbed truck involved in the incident had been removed from the construction site prior to the MN FACE site investigation. Photos of the truck, with the loading boom contacting the power line, were viewed by MN FACE investigators. A police report of the incident was requested and obtained. Additional releasable information was obtained during interviews with the employer, MN OSHA investigators, electrical utility personnel, and the county coroner.

INVESTIGATION

On the morning of the incident, the victim and a coworker used a flatbed truck equipped with a loading boom to deliver materials to a building construction site. They returned about mid-afternoon to pick up excess materials from two locations on the construction site (see Figure 1).

The victim drove the truck onto the site and parked it at the first pick-up location. He climbed onto the boom operating platform and loaded material onto the truck flatbed. After loading the material, he did not place the loading boom in its fully lowered and secured position. The two-section boom was in a partially extended, inverted-V position with the loading fork resting on the building materials on the truck flatbed. The boom elbow or hinge point, at the tip of the inverted-V was approximately 30 feet above ground. The extended boom passed beneath the 40,000-volt overhead power lines as the victim backed the truck from the first pick-up location to the street in front of the site.

The victim drove the truck forward approximately 80 feet and turned into a second driveway at the site. He drove the truck onto the site and the extended boom contacted the 25 foot high, 40,000-volt overhead power line. He and his coworker heard a loud bang when the boom contacted the power line. He stopped the truck and exited the cab to determine what had happened. While exiting the truck, he held onto the metal frame of a cab-mounted ladder used to climb to the boom operating platform. When he stepped to the ground, he provided a path to ground and was electrocuted.

The coworker jumped clear from the truck and was uninjured during the incident. The coworker estimated that the victim remained motionless, in contact with the truck for 60 to 90 seconds before he collapsed. A construction worker at the site observed that the rear truck tires were beginning to smolder. He was unable to approach the truck with a fire extinguisher until the power line was de-energized.

Emergency medical service (EMS) personnel arrived at the scene but were unable to reach the victim until utility personnel de-energized the power line. After utility personnel de-energized the power line, EMS personnel reached the victim and attempted resuscitation. Resuscitation efforts were continued as he was transported to a local hospital but he was pronounced dead on arrival (DOA).

CAUSE OF DEATH

The cause of death listed on the death certificate was electrocution.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that booms are fully lowered and secured before boomed vehicles are moved.

Discussion: The practice of moving a boom truck while the boom is extended is extremely hazardous. Overhead power lines can be difficult to see from the ground, particularly if attention is focused on operating the vehicle, and vision is limited by the cab enclosure. The victim apparently did not know (or had forgotten) that the power line was located in the path of the extended boom or saw the power line and misjudged the clearance. If the boom had been fully lowered and secured prior to the truck being moved, this incident would not have occurred.

Recommendation #2: Employers should ensure that adequate clearance between loading booms and overhead power lines is maintained.

Discussion: OSHA Standard 29 CFR 1926.550 (a)(15) requires that a minimum clearance of 10 feet be maintained between cranes and power lines of 50,000 volts or less. In addition, this standard calls for an observer to be posted to give warning whenever it is difficult for the operator to maintain the required clearance by visual means. If these actions had been taken, this fatality may have been prevented.

Recommendation #3: Employers should ensure that boomed vehicle drivers/operators are trained in their safe operation.

Discussion: Drivers/operators of boomed vehicles should receive formal training in their safe operation and in the potential hazards associated with boomed vehicle operations. Training should address, at a minimum:

- All OSHA standards applicable to boomed vehicles and the operation of these vehicles near overhead power lines.
- Recognition of hazards associated with loading/unloading of materials in the vicinity of overhead power lines. Training in hazard recognition is in accordance with OSHA Standard 29 CFR 1926.21 (b)(2).
- Selection of sites for loading/unloading of materials that are level, firm, and located away from overhead powerlines.
- Use of established procedures in emergency situations.

Recommendation #4: Boomed vehicle manufacturers should design interlock systems that prevent vehicles from being moved unless the boom is fully lowered and secured.

Discussion: A parking brake, steering wheel, or transmission interlock system should be designed and installed on boomed vehicles that prevents the vehicle from being moved unless the boom is fully lowered and secured. Interlocks that would require a boom to be fully lowered and secured before the truck could be moved would ensure that the boom could not contact overhead power lines. Development and installation of interlock systems on boomed vehicles could prevent the occurrence of similar incidents.

REFERENCES

1. Office of the Federal Register: Code of Federal Regulations, Labor, 29 CFR Part 1926.550 (a)(15) and 1926.21 (b)(2), U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C., July 1, 1992.

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