STATE OF NEW YORK
DEPARTMENT OF HEALTH

FATALITY ASSESSMENT AND CONTROL EVALUATION

Millwright Killed When Aerial Work Platform Tipped Over
Case Report: 03NY034

SUMMARY

On June 4, 2003, a 49 year-old male millwright employed at a magnetic powder manufacturing company sustained fatal injuries when an aerial work platform (an extensible articulating boom lift) he was operating tipped over. On the day of the incident, the victim and a co-worker operated the lift that was leased from a local leasing company to perform maintenance tasks. The aerial lift was equipped with a stabilizing device: an extendable axle to enhance the vehicle's stability. The manufacturer stated in the Operators and Safety Manual that all operators must properly position the extendable axle and lock it into position before raising the platform or extending the boom. There were two safety features on the lift that were designed to ensure the use of the stabilizing device: an axle set indicator light and an interlock. A post incident test showed that while the indicator light worked, the interlock was inoperable. The plant maintenance crew did not receive the Operators and Safety Manual from the leasing company nor did they receive any training on how to operate the lift. According to the witnesses, the extendable axle was never set out during the entire day of the incident. At approximately 3:30PM, the victim was performing a visual inspection of the exterior of a bucket elevator that was about 70 feet high. He wore a harness with a lanyard that was attached and secured to the platform attachment point, a hard hat, safety glasses and steel-toed boots. Just prior to the incident, the co-worker saw the victim in the platform directly underneath the elevator's catwalk that was about 54 feet high. A few minutes later, the co-worker and a swing shift millwright heard and saw the lift fall. The boom was extended to 38 feet when the lift tipped. The platform hit a pickup truck parked nearby causing the victim, who was still attached to the platform by the lanyard, to be bounced out of the platform. The co-worker and the swing shift millwright ran to the victim and found him unconscious and not breathing. The fire department and the rescue crew responded within three minutes after receiving a 911 call from the plant. The victim was transported to a local hospital where he was pronounced dead.

New York State Fatality Assessment and Control Evaluation (NY FACE) investigators concluded that to help prevent similar incidents from occurring in the future, employers should:

- ***Ensure that the employees receive proper training before allowing them to operate aerial lifts;***
- ***Require that the operators inspect the aerial lift and test critical safety features before each use and perform safety checkups each time the platform is repositioned during operation;***

Additionally, equipment leasing companies should:

- ***Provide the customer who leases an aerial work platform with the manufacturer's operating and safety manual;***
- ***Inspect an aerial lift thoroughly prior to delivering it, and ensure that all safety features are operable at the time of delivery.***

INTRODUCTION

On June 4, 2003, a 49 year-old male millwright employed by a magnetic powder manufacturing company sustained fatal injuries when an aerial work platform (an extensible articulating boom lift) he was operating tipped over. The New York State Fatality Assessment and Control Evaluation (NY FACE) investigators learned of the incident on June 5, 2003 from a news media report. On June 11, 2003, a NY FACE investigator traveled to the incident site to conduct a fatality evaluation. During the site visit, the NY FACE investigator met with the representatives of the magnetic powder manufacturing company, reviewed the company's written safety and health programs and the employee training records, observed the preserved incident scene and the aerial work platform that was involved in the incident, and interviewed the witnesses. The case was reviewed with the Occupational Safety and Health Administration (OSHA) compliance officer who investigated the fatal incident. The manufacturer of the work platform provided technical information about the equipment. Police reports and the death certificate were reviewed.

The victim's employer had been in business since 1985 manufacturing magnetic powder used for making magnetic sheets for the advertising industry and magnets for the toy industry. At the time of the incident, the company employed 27 full time employees, among which were 13 production workers, three laboratory technicians, four (maintenance) millwrights, one janitor and six management personnel. The company had established a safety committee with eight members. The committee held monthly meetings and conducted annual safety inspections. All employees received orientation training at the time of hiring and annual refresher training on job safety and OSHA mandated subjects.

The facility maintenance department was composed of a supervisor and three millwrights who were responsible for maintaining equipment and machinery in the plant. All maintenance workers received training on forklift safety and were certified by the company to operate forklifts. The maintenance department occasionally leased equipment such as an aerial work platform to perform annual and semiannual maintenance tasks. The victim's employer did not provide specific training on how to safely operate the aerial lift nor did it purchase a training session from the leasing company.

The victim had been employed by the company as a millwright for 13 years. The fatal incident was the first at the company.

INVESTIGATION

On June 3, 2003, the day before the incident, the maintenance department leased an 80-foot aerial lift from a local leasing company for maintenance work scheduled the next day. The lift was purchased by the leasing company at an auction 30 days before the fatal incident. The leasing company did not have any maintenance or inspection records for the lift. According to the owner of the leasing company, the owner performed a complete inspection of the lift after the purchase. However there was no written record of his inspection. It was the first lease of this lift. The lift was delivered to the plant on the evening before the incident. The manufacturer's Operators and Safety Manual for this lift was not delivered with the lift. The plant maintenance crew did not receive any training from their employer or from the leasing company on safe operation of the lift.

The aerial lift was manufactured in 1990. Its work platform capacity was 500 Lbs. and the hydraulic-operated extensible articulating boom could be extended to a maximum height of 80 feet. In order to increase the vehicle's stability, the lift was equipped with an extendable axle - a stabilizing device that can expand the front steering wheel base from 80 inches to 120 inches. The manufacturer's Operators and Safety Manual required that all operators properly position the extendable axle and lock it into position before raising the platform or extending the boom. The lift had two safety features that were designed to ensure the use of the stabilizing device: an axle set indicator (warning) light and an interlock. When the axle was not extended and locked, the warning light would illuminate; while the interlock would prohibit the boom to be extended more than 10 feet and raised above horizontal. According to the test performed after the incident, the axle warning light worked, but the interlock did not. A forensic examination of the inoperable interlock was performed and the result was not released by the representatives of the involved parties due to litigation at the time that this report was written.

Figure 1. Bucket elevator that was being inspected by the victim during the fatal incident.

On the day of the incident, the victim, a co-worker and the maintenance supervisor started working around 8:30AM. The main task of the day was to remove two pieces of fiberglass smokestack located approximately 60 feet above ground level. The maintenance crew had to remove the bolts that secured the stacks and prepare them to be picked up by a crane contractor in the afternoon. The victim and the co-worker both operated the lift in the morning and early afternoon without incident. According to the witnesses, the extendable axle was never set out during the entire day and the boom was fully extended while the two workers were both working in the platform at the same time near and around the smokestack. The victim and the co-worker wore harnesses with lanyards that were secured to the platform, hard hats, safety glasses and steel-toed boots.

At approximately 3:30PM, the maintenance crew finished removing the fiberglass stacks. The supervisor and the victim discussed doing a visual inspection of the exterior of a bucket elevator (see Figure 1). The supervisor left after the discussion and the victim proceeded to perform the inspection. The bucket elevator was approximately 70 feet high and was used to transport iron oxide powder into the plant. The maintenance department inspected the elevator and looked for wear and rust spots approximately once every six months. The unpaved ground around the elevator was solid with grades less than 4 degrees (°). The manufacturer required that the platform should be leveled within 5°. The tires of the platform appeared properly inflated and had good treads based on the post incident examination.

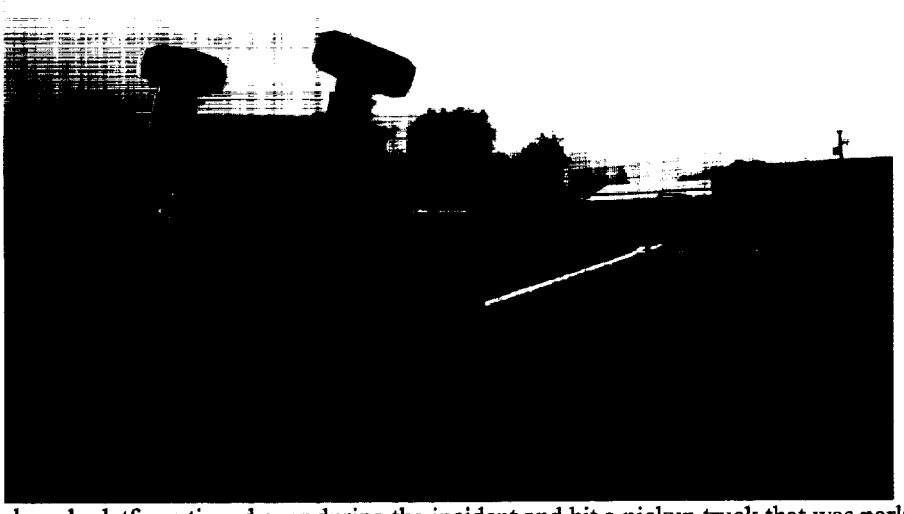

Figure 2. The aerial work platform tipped over during the incident and hit a pickup truck that was parked near by.

Just prior to the 3:45PM incident, the co-worker saw the victim in the platform directly underneath the elevator's catwalk, approximately 54 feet high. A few minutes later the co-worker and a swing shift millwright who had just arrived at the plant heard and saw the lift falling (see Figure 2). According to the post-incident investigation, the boom was extended to 38 feet when the lift tipped. The platform hit a pickup truck parked nearby, resulting in the victim, who was still attached to the platform by the intact lanyard, being bounced out of the platform. The two millwrights ran to the

victim and found him unconscious and not breathing. One of the millwrights ran back to the office to call 911 and the other turned the lift off and remained at the victim's side. The fire department and the rescue crew responded within three minutes. The victim was transported to a local hospital where he was pronounced dead.

CAUSE OF DEATH

Cause of death was reported on the death certificate as fractured neck due to or as a consequence of multiple injuries.

RECOMMENDATIONS

Recommendation #1: ***Employers should ensure that their employees receive proper training and are qualified to operate an aerial work platform before allowing the employees to operate the equipment.***

Discussion: Prior to allowing an employee to operate an aerial lift, the employer should ensure that each operator receive training specific to that lift from a person who has the knowledge, training, and experience to train operators and evaluate their competence. The training should consist of formal instruction and hands-on training. Employers should certify that each operator has been trained and evaluated as required. Refresher training should be provided whenever there is an accident or near-miss incident, new assignment, or conditions change in the workplace. The employers can provide the training by themselves or they may choose to arrange for the training through a contract with the equipment supplier. The training should cover the following subjects:

- Operating instructions, warnings, and precautions;
- Locations and functions of controls and instrumentation;
- Lift capacity;
- Lift stability including meaning of axle set warning indicator light and use of interlock;
- Any required lift inspection and maintenance;
- Operating limitations; and
- Other unique or potentially hazardous environmental conditions associated with each maintenance task that could affect the safe operation of the lift.

In this case, the maintenance department leased aerial lifts only once or twice a year and the millwrights could not gain proficiency through daily operations. In addition, the millwrights may have to operate leased aerial lifts that differ in models and designs. It is extremely important that employers obtain the operation and safety manuals from leasing companies or equipment manufacturers, and require the operators to review the manuals and follow manufacturer's instructions and requirements before each use.

Recommendation #2: ***Employers should require that the operators inspect the aerial lift and test critical safety features before each use and perform safety checkups each time the platform is repositioned during operation.***

Discussion: Employers should require that the operators examine and inspect an aerial lift before each use. The pre-start inspection should include more than simply checking the fuel and oil

supplies. A check of all components should be made to assure their security and proper functioning. A functional check of all systems, under no load, should be performed daily once the machine is ready for service from the ground control panel if possible. All critical safety features, such as interlocks, warning lights and alarms should be thoroughly tested. If the examination shows any condition adversely affecting the safety of the equipment, employers should not allow it to be placed in service.

Each time when the aerial lift is repositioned during operation, the operators should ensure that the platform is operated on a surface within the limits specified by the manufacturer, and the outriggers, stabilizers, extendible axles, or other stability enhancing means, are used as required by the manufacturer. Employers should ensure that the operators follow the requirement through close supervision and work site inspection performed by a qualified person.

Recommendation #3: ***Equipment leasing companies should provide the manufacturer's operating and safety manuals to each customer who leases an aerial platform.***

Discussion: Aerial platform leasing companies should provide manufacturer's operating manual and safety manual to a leaseholder. These manuals are vital to communicate necessary safety information to users and operators.

Recommendation #4: ***Leasing companies should always inspect safety features on an aerial platform to ensure that it is in working order before the equipment is released for delivery to a customer.***

Discussion: Aerial platforms should be inspected, serviced and adjusted to manufacturer's requirements prior to each lease. The critical safety features should be tested. All malfunctions or problems identified should be corrected before the equipment is placed in service.

Keywords: aerial platform, boom lift, extendable axle

REFERENCES

Code of Federal Regulations [1999]. 29CFR1910.67. "Vehicle-mounted elevating and rotating work platforms". Washington, D.C.: U.S. Government Printing Office, Office of the Federal Register.

American National Standard. ANSI/SIA A92.5-1992. "Boom-supported Elevating Work Platforms". Scaffold Industry Association, Inc.

The Fatality Assessment and Control (FACE) program is one of many workplace health and safety programs administered by the New York State Department of Health (NYS DOH). It is a research program designed to identify and study fatal occupational injuries. Under a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), the NYS DOH FACE program collects information on occupational fatalities in New York State (excluding New York City) and targets specific types of fatalities for evaluation. NYS FACE investigators evaluate information from multiple sources. Findings are summarized in narrative reports that include recommendations for preventing similar events in the future. These recommendations are distributed to employers, workers, and other organizations interested in promoting workplace safety. The FACE program does not determine fault or legal liability associated with a fatal incident. Names of employers, victims and/or witnesses are not included in written investigative reports or other databases to protect the confidentiality of those who voluntarily participate in the program.

Additional information regarding the New York State FACE program can be obtained from:

New York State Department of Health FACE Program
Bureau of Occupational Health
Flanigan Square, Room 230
547 River Street
Troy, NY 12180

1-866-807-2130

www.health.state.ny.us/nysdoh/face/face.htm