

## Journeyman Glazier Dies After Being Catapulted From Manlift in Indiana

### SUMMARY

A journeyman glazier died after attempting to lift a 1000-pound case of glass with the 60-foot-long articulated boom of a two-man rated manlift. As the victim attempted to raise the case of glass, which weighed substantially above the 600-pound-rated lift capacity of the manlift, the off-side wheels on the base of the manlift were pulled 4 1/2 feet off the ground. When the victim realized he was in danger of turning the manlift over, he immediately reversed the controls to lower the boom. With the controls reversed and the manlift operating under full power the boom dropped approximately 2 feet, causing slack in the sling being used to move the case of glass and allowing the sling to slip free from the manlift. Relieved of the weight of the 1000-pound case of glass, the boom of the manlift hurtled skyward and the victim was catapulted from the bucket. The victim fell to earth more than 30 feet from the bucket. The victim died of his injuries 44 hours after the incident. NIOSH investigators concluded that, in order to prevent future similar occurrences, employers and employees must:

- ensure that only fully trained and qualified personnel be permitted to operate equipment and machinery
- ensure that equipment is operated within the limits of its design specifications at all times
- require that fall protection equipment be employed by all individuals working in elevated platforms
- explore the practicality of utilizing pressure relief valves on all hydraulic equipment.

### INTRODUCTION

On November 2, 1989, officials of the Indiana Occupational Safety and Health Administration notified the Division of Safety Research (DSR), of the death of a 43-year-old male journeyman glazier who was thrown to earth from the bucket of a boom-equipped manlift on August 7, 1989. He died on August 9, 1989. Technical assistance was requested by the Indiana Occupational Safety and Health Administration, and on November 28, 1989, a safety specialist conducted an investigation of this case. The case was discussed with state officials and emergency services personnel. The incident was reviewed with company officials and the incident site investigated and photographed.

The employer is a commercial glass contractor with 32 employees, 20 of whom are employed as glaziers. The company has been in business for 38 years, and the company president serves as safety officer. Although the company had no written safety program at the time of this incident, a written program has since been developed, and is being implemented. Safety instruction is provided to employees via on-the-job training. Employees are hired through the local union hall. The victim had been employed by the company for 1 month at the time of the incident. The victim was classified as a journeyman glazier, and had worked in the glass industry for "several years" prior to this incident.

## INVESTIGATION

On the morning of the incident, the victim was one of two journeyman glaziers assigned to install window glass in a new five-story building. The men were using a self-propelled manlift to reach the window openings on the building. This manlift utilized a 60-foot-long articulated boom to move the two-man bucket to each window opening.

At approximately 9:30 a.m., another contractor working at the site requested that the glaziers move a case of glass located near an entrance to the building approximately 6 feet to clear the entrance. The case of glass weighed approximately 1000 pounds, and measured 50 inches by 28 inches by 20 inches tall.

The victim did not usually operate the manlift; however, on this day he had talked his co-worker into letting him operate the lift. The victim had operated similar man lifts numerous times in the past with other employers. While the co-worker was occupied with another task, the victim climbed into the bucket of the manlift and prepared to use the manlift to move the case of glass. (Using the manlift to move cases of glass was a normal procedure. With the boom retracted the manlift had rated a capacity of 2200 pounds.) Instead of driving the manlift to a point near the case of glass, the victim decided to accomplish the move by extending the boom of the unit. Accordingly, from his position in the bucket at the end of the boom, the victim extended the boom to its maximum length of 60 feet. With the boom fully extended, the manlift had a rated capacity of 600 pounds. With the bucket (and the victim inside) located approximately 8 feet directly above the case of glass to be moved, an employee of another contractor attached a sling from the case of glass to the bucket. The victim then attempted to lift the glass. Since the combined weight of the victim and the glass was considerably above the rated capacity of the boom, the glass did not move. Rather, the bucket on the boom was drawn down toward the case.

The victim apparently failed to realize what was happening and continued to try to lift the glass. The victim's co-worker returned to the scene and observed that the off-side wheels of the manlift were approximately 4 1/2 feet off the ground (Figure). He called out to the victim and told him the lift was about to overturn. At this time the victim realized what was happening and reversed the controls to lower the boom. With the controls reversed

and the unit operating under full power, the boom suddenly dropped approximately 2 foot. This sudden drop caused a momentary slack in the sling, which fell free of the bucket.

Relieved of the load imposed by the 1000-pound case of glass, the off-side wheels of the manlift dropped back to earth. As the base of the manlift dropped down, the boom hurtled skyward and the victim was catapulted from the bucket.

The victim fell to earth more than 30 feet from the bucket. The victim was conscious, but obviously seriously injured. The victim's co-worker called out to other workers in the area that there had been an accident and that an ambulance was needed. One of the other workers called the local Emergency Medical Services (EMS) who dispatched an ambulance to the scene.

The EMS unit arrived on the scene approximately 6 minutes after the incident had occurred. Paramedics stabilized the victim and transported him to a local medical center. The victim died of his injuries at a local medical center 44 hours after the incident.

#### CAUSE OF DEATH

The coroner's report gave the cause of death as multiple blunt force injuries.

#### RECOMMENDATIONS/DISCUSSION

Recommendation #1: Only fully trained and qualified personnel should be permitted to operate machinery and equipment.

Discussion: OSHA standard 29 CFR 1926.20(a)(4) specifically states that "the employer shall permit only those employees qualified by training or experience to operate equipment and machinery." The victim in this case had only worked for his employer for 1 month at the time of the incident. Although the victim was classified by the local labor organization as a "journeyman," and had reportedly operated similar equipment in the past, he had received no training in the operation of this manlift. His knowledge and skill in the operation of this equipment was therefore an unknown factor. His attempt to lift the case of glass with the boom fully extended suggests a lack of familiarity with the capabilities of this equipment. Until the victim had received training in the safe operation of this piece of equipment and had been given the opportunity to gain some "hands-on" experience under the guidance of a trained operator, he should not have been permitted to operate the equipment by himself.

Recommendation #2: Equipment should only be operated within the limits of its design specifications.

Discussion: The manlift in this incident was used in an attempt to lift close to twice its rated capacity. Its failure to do so set up the sequence of events which resulted in this fatality. Had the manlift been moved closer to the case of glass and the lift made with the boom retracted, this incident could have been prevented. As it was, the equipment was not being operated within its design capabilities when this incident occurred.

Recommendation #3: Personal fall protective equipment should be employed by all individuals working in elevated platforms.

Discussion: Although company policy calls for the use of safety belts when working from elevated surfaces, the victim was not wearing a safety belt at the time of the incident. Had the victim been wearing a safety belt secured to the bucket he would not have been thrown from the unit.

Recommendation #4: Manufacturers of hydraulic equipment should consider the installation of pressure relief valves on hydraulic equipment.

Discussion: A "bleed-off" type pressure relief valve installed in the hydraulic system of this vehicle and set to maintain only the maximum designed pressure for the system, might have prevented the tipping of the unit when an attempt to lift an excessive load was made, thereby preventing an incident such as this.

Recommendation #5: Safety latches should be installed on all lifting hooks.

Discussion: The absence of a safety latch (or gate) on the lifting hook allowed the sling to come free from the hook when the boom suddenly dropped. Had this sling been secured by a safety latch the sudden loss of the load weight might not have occurred and this incident could have been prevented.

## REFERENCES

29 CFR 1926.20. Code of Federal Regulations, Washington, DC: U.S. Government Printing Office, Office of the Federal Register