FACE 9712

Tree Trimmer Dies After 40-Foot Fall in Aerial Bucket--Virginia

SUMMARY

A 29-year-old male tree trimmer (the victim) died after falling 40 feet with the aerial bucket from which he was working. The victim was trimming trees in a powerline right-of-way while working from an aerial bucket mounted on a log skidder. A ground man, facing away from the victim, was picking up the fallen limbs when he heard a snapping sound similar to that of a limb breaking. When the ground man turned, he saw that the bucket's extended boom had broken, 5 feet from its base, and had fallen to the ground. The victim, tied off to the anchor point in the bucket, had fallen to the ground inside the bucket. The ground man immediately alerted the supervisor, who summoned the rescue squad from a radio in the company truck. The rescue squad arrived within 10 minutes and transported the victim to the hospital, where he was pronounced dead by the attending physician. NIOSH investigators concluded that, to prevent similar incidents, employers should:

- ensure that machine operators perform daily maintenance checks on machinery before beginning operations.

Additionally,

- manufacturers should explore alternative methods of mounting after-market boom apparatus to machinery that would place the least amount of stress on the apparatus' components, and evaluate the materials used in the manufacture of these components.

INTRODUCTION

On April 14, 1997, a 29-year-old male tree trimmer (the victim) died after falling 40 feet with the aerial bucket from which he was working. On June 24, 1997, officials of the Occupational Safety and Health Administration of the Commonwealth of Virginia (VOSH) notified the Division of Safety Research (DSR) of this fatality, and requested technical assistance. On July 2, 1997, a DSR safety specialist conducted an investigation of the incident. The incident was discussed with employer representatives, the county police, and the VOSH compliance officer. Videotape of the machinery involved and the incident site was reviewed during the incident and photographs of the site were obtained.

The employer in this incident was a multi-state electrical contractor that specialized in powerline construction and powerline right-of-way clearance. The employer had been in operation for 33 years and employed 125 workers at the branch office involved in the

incident. The employer had a comprehensive written safety program and detailed, job-specific safe work procedures. Documented training was conducted in the field, in the classroom, and on the job. Documented retraining was conducted as necessary for different job categories. Weekly safety meetings were held at the company office for workers, and daily tailgate meetings were conducted by site supervisors in which any potential hazards that workers might be exposed to on that day were discussed. The victim had worked for the employer for 6 years. This was the first fatality the employer had experienced at this branch office.

INVESTIGATION

The employer had an ongoing contract to clear powerline right-of-ways for the local electric utility. On the day of the incident, a three-man crew consisting of a tree trimmer (the victim), a ground man, and a supervisor were trimming a right-of-way behind a residential area. The men used a log skidder equipped with an after-market 50-foot articulating aluminum boom and aerial bucket assembly to access the area.

The victim positioned the log skidder in the right-of-way, then entered the aerial bucket and attached his lanyard to the bucket's anchor point. The victim then fully extended the boom and began trimming the trees. As the ground man was picking up limbs, he heard a snapping sound like that of a limb snapping. As he turned, he saw the boom falling to the ground with the victim inside the bucket. The ground man immediately alerted the supervisor, then ran to aid the victim, while the supervisor summoned the rescue squad from a phone in the truck. The men then removed the victim from the bucket and initiated CPR. The rescue squad arrived at the scene within 10 minutes along with the police and county coroner. The victim was pronounced dead at the scene by the county coroner.

The bottom leg of the articulating boom broke in two pieces approximately 5 feet from its attachment point to the log skidder, where the boom rested in its cradle. The point at which the boom snapped was covered with a collar that rested against the cradle. The collar did not contribute to the structural integrity of the boom; it was only present to protect the boom where it rested against the cradle.

CAUSE OF DEATH

The medical examiner listed the cause of death as crushing injuries to the chest.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that machine operators perform daily maintenance checks on machinery before beginning operations.

Discussion: In this instance, it could not be determined whether or not a preexisting crack was present when the incident occurred. If a crack did exist underneath the collar, it would have been undetectable by a visual inspection of the boom; however, daily visual inspections and maintenance checks to identify potential hazards should be performed prior to placing machinery into operation. Additionally, the employer might consider requiring loosening of the 'Lour collar bolts on a daily basis to slide the collar forward or backward to visually inspect the area under the collar for cracks. After the incident, the utility requested that the company have the booms on their other skidders dye tested to see if any cracks could be identified. No other cracks were found. While this method of testing might be economically unfeasible to perform on a regular basis, it could be performed annually or biannually.

Recommendation #2: Manufacturers should explore alternative methods of mounting after-market boom apparatus to machinery that would place the least amount of stress on the apparatus' components, and evaluate the materials used in the manufacture of these components.

Discussion: The rest cradle of the boom was located 5 feet from the boom's attachment point to the skidder. This meant that the weight from the remaining length of the lower boom section and the weight of the entire upper boom section and aerial bucket came to rest at that point. This was especially true when the skidder was in transit over the rough terrain that these vehicles regularly travel, making the boom assembly bounce upward and downward. When the boom was dye tested after the incident, it was concluded that the crack had occurred at some time during transit. The manufacturer should consider reevaluating the mechanism by which the boom assembly attaches to the log skidder to determine if the assembly might be mounted in a way that would more evenly distribute the weight of the assembly, especially during transit. Additionally, it might be possible to install another support structure for the assembly that would originate at the front of the roll structure of the skidder and be positioned upward to the boom assembly.

Employers and manufacturers should evaluate the materials used in the manufacture of boom assembly components to determine what materials would be more stress resistant and less likely to crack or break under stress.