

FACE-92-10

Tree Faller/Bucker Crushed Between Two Logs While Bucking a Fallen Tree--Alaska

SUMMARY

A 44-year-old male tree faller/bucker (the victim) was felling and bucking (cutting into specified lengths) timber on a mountainside with a 67 percent slope. The victim felled a hemlock tree which came to rest across another hemlock that he had previously felled. Both logs were lying almost parallel with the slope contour. The victim removed the tree limbs from the second hemlock, then measured and marked the log for bucking into sections. After bucking off two sections of the log without incident, he bucked off a third section, which allowed the log's heavier end to pivot down slope. The lighter end of the log swung up slope and fatally crushed the victim against the first hemlock. NIOSH investigators concluded that in order to prevent future similar occurrences, employers should:

- ensure that fallers and buckers properly evaluate felled trees to be bucked, and the area around them so that potential hazards can be avoided
- ensure that fallers and buckers prepare an adequate escape path before attempting to buck any tree
- ensure that fallers and buckers receive adequate training in safe work procedures
- conduct inspections to ensure that workers follow company safety procedures

INTRODUCTION

On October 22, 1991, a 44-year-old male faller/bucker (the victim) was killed after the log he was bucking pivoted and crushed him against a previously felled tree. On October 24, 1991, officials of the Alaska Department of Occupational Safety and Health (AKOSH) notified the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR), Alaska Activity of the death. On November 19, 1991, a safety specialist from the DSR Alaska Activity traveled to the logging area near the incident site and conducted an investigation. (The exact incident site was not accessible at the time of the on-site investigation.) The incident was reviewed with company representatives and the AKOSH compliance officer assigned to this case. Photographs and diagrams of the incident site were obtained during the investigation. The employer in this incident was a logging company that had been in operation for 2 years as a subcontractor for larger logging companies. The employer had eight employees, all of whom were fallers/buckers. Their job was to cut standing trees, remove the limbs, and then buck (cut) them into lengths suitable for yarding, loading, and transporting. The company had a safety policy, safety program, and written basic safe work procedures-at the time of the incident. Because the company was small, the owner, who also worked as a faller/bucker, took responsibility for the safety program. Safety meetings were conducted weekly to discuss a variety of safety issues pertaining to the logging operations. The victim had approximately 4 years of experience as a faller (this included 13 months with the employer).

INVESTIGATION

The employer had been subcontracted by a larger logging company to clear-cut a 10-acre strip of timber in a mountainous area. On the day of the incident, the victim and two other fallers/buckers (coworkers) were working to clear-cut a timbered area with a 67 percent slope. The three fallers/buckers worked approximately 500 to 700 feet from each other, with the victim working at one end of the assigned area, approximately 100 feet down slope from the logging road. The victim (and the two coworkers) began felling, limbing, and bucking trees at about 7:30 a.m. They had planned to quit for the day at 1:00 p.m. Although there were no eyewitnesses to the incident, evidence suggests the following sequence of events.

The victim was using a 4-horsepower, 34-inch bar chain saw. At approximately 11:30 a.m., the victim felled and limbed a hemlock tree (tree #1) which was about 125 feet tall and 30 inches in diameter at the base. He bucked the tree into several logs, which remained lying where they were bucked--i.e., parallel with the contour of the slope. Brush, stumps, and rough terrain kept them from rolling down slope. At approximately noon, the victim felled a second hemlock tree (tree #2), which was about 130 feet tall and 31 inches in diameter at the base. Tree #2 landed across tree #1, coming to rest with its top end pointing slightly down slope (at a 30-degree angle to tree #1), and its base end suspended approximately 30 inches above ground level. After limbing tree #2, the victim measured and marked off five sections of the tree to be bucked. Starting at the base end of the tree, these sections consisted of two 40-foot lengths, one 20-foot length, one 16-foot length and one 14-foot length (the top and non-merchantable part of the tree). Instead of bucking the suspended base end of the tree first (in accordance with the company's standard operating procedures under these conditions), the victim began bucking the top end (14-foot) of tree #2 (first cut). He then bucked the 16-foot log section (second cut). Standing between the two tree logs (up slope from tree #2, and with his back to tree #1), the victim began to buck the first 20-foot log section (third cut). Since the ground where the victim stood formed a natural depression, the top of tree #1 was the same height as his shoulders. The area directly to the right of the victim was heavily covered with brush, obstructing his exit or escape in that direction.

When the victim completed his third cut of tree #2, the weight of the remaining 80-foot log shifted, causing it to pivot on top of tree #1, crushing the victim's head between the two logs (a scissor effect) and causing his death instantly (according to the medical examiner). At approximately 1:00 p.m., the two coworkers turned their saws off and quit for the day. Not hearing the victim's chain saw, they assumed that he had also quit for the day as planned. They got into their truck and drove along the logging road to pick him up. Ten minutes later he still had not appeared, so the coworkers yelled for him, but received no answer. They found him about 5 minutes later, with his head pinned between the two logs.

The coworker who found the victim saw that he was unresponsive, without a pulse, and blue in color. He yelled to the other coworker for help, who in turn called for assistance on the truck radio. Within 5 minutes two other fallers and the owner arrived at the scene. The fallers extricated the victim by cutting off a 3-foot log section from the end of tree #2. Emergency medical service (EMS) personnel arrived at the scene about 20 minutes later, and noted the victim to be "obviously

dead."

CAUSE OF DEATH

The medical examiner listed the cause of death as massive blunt- force trauma to the head.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that fallers and buckers properly evaluate felled trees to be bucked, and the area around them so that potential hazards can be avoided.

Discussion: Instead of first bucking from the suspended base end of tree #2, the victim bucked from the top end of the tree. Before starting any bucking cut, fallers and buckers should carefully analyze potential log movements and other hazards that might develop as the log is released. Section 07.130(f) (2) of the Alaska Department of Labor (AKDOL) Logging Standard states that "The buckler shall carefully examine the tree before making a cut to determine which way the logs will roll, drop or swing when the cut is completed. The safe position found shall be used in finishing the cut." The careful evaluation of logs to be bucked is also addressed on pages 85-90 in the Fallers' and Buckers' Handbook: "Before starting any cut, buckers should think ahead. Plan the work by analyzing log movements and other hazards that may develop as a cut log is released. ...Never start a bucking cut if you consider the log to be in a dangerous position." A careful evaluation of the log before bucking will reveal such hazards as pivot points. These are usually encountered during bucking operations, and can be extremely dangerous if the buckler does not recognize them. Page 90 in the Fallers' and Buckers' Handbook addresses pivot points: "As a bucked log is released, an unseen pivot point could cause one end of the log to slide or roll downhill, and the other end to move uphill. If the buckler hasn't noticed the pivot and planned accordingly, he could be seriously injured." If a hazard (such as a pivot point) is unavoidable, then the log to be bucked should be secured against movement or repositioned to alleviate the hazard.

Recommendation #2: Employers should ensure that fallers and buckers prepare an adequate escape path before attempting to buck any tree.

Discussion: Ensuring a safe escape path before bucking is stated as a guideline on page 85 in the Fallers' and Buckers' Handbook: "Make sure all obstructions to safe bucking and all escape routes are cleared before bucking." In this incident the victim made his third bucking cut while inside a natural depression, hemmed in by logs and brush. The only other choice was down slope from a log which would be free to roll following the cut. As a result, his only available escape path was directly into the pivoting log from tree #2.

Recommendation #3: Employers should ensure that fallers and buckers receive adequate training in safe work procedures.

Discussion: In addition to regular employee safety meetings (which the owner conducted on a weekly basis), logging employers should also ensure that employees periodically receive formal safety training pertinent to their work tasks. The Alaska Department of Labor has a voluntary compliance program which offers safety training to employers and employees on a request basis. Effective periodic safety training in the logging industry will raise the employees' awareness of the hazards which confront them. The Fallers' and Buckers' Handbook states that every employer must ensure that fallers and buckers are adequately trained or have an established safety training program. At a minimum, the training should include chain saw use and maintenance, the recognition of work area hazards, safe work procedures, CPR, and first aid.

Recommendation #4: Employers should conduct inspections to ensure that workers follow company safety procedures.

Discussion: Conducting regular scheduled and unscheduled safety inspections of all logging tasks by qualified individuals will help ensure that established company safety procedures are being followed. Additionally, scheduled and unscheduled safety inspections clearly demonstrate that the employer is committed to the safety program and the prevention of occupational injury.

REFERENCES

Workers' Compensation Board of British Columbia. Fallers' and Buckers' Handbook. Vancouver, Canada: 1990, pp. 85-90.

Alaska Department of Labor, Division of Labor Standards and Safety. Occupational Safety and Health Standards for Logging, Section 07. August 1990.