

## Fatality Investigation Report

2003-7-1

### Logger killed as skyline cable whips free of slash pile

#### SUMMARY

On April 28, 2003, a 37-year-old logger, working as a hooktender, was struck and killed by a skyline cable as it whipped free from a large pile of logging debris, known as a slash pile. The hooktender, the employer's representative responsible for supervising the logging crew, and a choker setter, had extended the skyline to a new tailhold, without running the lines in and pulling a new layout in a straight line to the new location as originally planned. The jump put a 90-degree angle in the cable, with the slash pile in its path as it was drawn taut. The hooktender gave a signal to raise the skyline before he and the choker setter were in the clear. They were standing in front of the tailhold stump, less than 15 feet away, and had just turned to move uphill to a safe spot, when the skyline cable broke through the slash pile and whipped outward and back. The heavy cable struck the hooktender in his chest, knocking him into the choker setter. The choker setter sustained a fractured arm. The hooktender was knocked unconscious. The call of a man down brought the whole crew of eight to the scene, plus the employer and landowner who were also onsite. The victim was put on a stretcher and carried to a nearby logging road. He regained consciousness briefly and complained of intense pain. He tried to stand, but immediately fell, no longer breathing. Resuscitation efforts were unsuccessful. Local ambulance personnel arrived and transported the victim to a landing site for a life-flight helicopter, where he was pronounced dead.



Example of a slash pile at a logging site. OR-FACE

#### CAUSE OF DEATH: Massive blunt trauma to chest wall

#### RECOMMENDATIONS

- Where possible, string lines to avoid hang-ups, and always position yourself in the clear of all lines being moved.
- The hooktender must plan operations in advance and effectively communicate with coworkers to assure the safety of the logging crew.
- Employers and employees should avoid extended work schedules, or drug and alcohol use during work hours, to reduce the risks created by fatigue or impairment.

## **INTRODUCTION**

On April 28, 2003 a 37-year-old logger, working as a hooktender, was struck and killed when the skyline cable he had relocated, suddenly whipped free from a large pile of logging debris and struck him. OR-FACE received notification of the incident from OR-OSHA on April 30. An employer interview and onsite visit were requested and denied, though a brief telephone conversation was held with the employer on April 30. This report is compiled primarily from law enforcement and medical examiner reports, and OR-OSHA documents.

The victim was experienced, with 20 years of work in and out of logging. He had worked with the present employer at several different times, and continuously for the past 5 years. At the time of the incident, the victim was working as hooktender, supervising a yarding operation. The employer reported the victim was "like family" and well liked by coworkers.

The logging crew was yarding logs in a clearcut unit on private land. The hooktender was assisted on the ground by a choker setter with 5 months of experience. Three other crew members were at a landing on the road above, including a [chaser](#) and two [rigging slingers](#), all with several years of previous logging experience. They had been working for 3 years with the present employer. The [yarder](#) operator, about  $\frac{1}{4}$ -mile away on a farther ridge, had 23 years of logging experience and 3½ years with the present employer. Near the yarder, two other crewmembers were working separately with a delimber, making a total of eight employees onsite.

The employer held regular safety meetings, and the issue of standing too close to the rigging was discussed regularly. At a safety meeting just prior to the incident, employees complained that the hooktender, as foreman, would "chew" on them for standing too close to the lines, but would allow himself to be too close at times.

## **INVESTIGATION**

On the morning of the incident, the logging crew was yarding logs in a clearcut unit, and had just finished logging a [skyline road](#). The next skyline road required the skyline to be moved to a tailhold farther down the hill. The hooktender and yarder operator had discussed the move at the beginning of the day, and originally intended to re-spool the skyline back up to the tower and then pull it back down to the new tailhold using a haywire (a smaller steel cable used to pull the much heavier steel skyline cable). The hooktender had laid out the haywire and other equipment, but changed his mind when the move occurred and decided instead to "jump" the line directly to the new tailhold. The new decision was not discussed with the yarder operator or the crew on the landing.

The original plan would have taken the skyline cable in a straight line from the tower to the new tailhold, without obstruction. The new route put a 90-degree bend in the course of the cable. A pile of tree limbs and other logging debris, known as a slash pile, lay inside the angle of the

cable. The slash pile, 3-4 feet tall and about 60 feet long, had been bulldozed together by a different logging operator before leaving the site.

The crew released the skyline cable from its original tailhold and used a [skidder](#) to pull slack up a logging road in order to reach the new tailhold. After the choker setter cleared an area and hooked the skyline to the new stump, the hooktender blew a whistle that signaled the yarder operator to begin to tighten the cable. The yarder operator needed to spool the line as it was being tightened onto the yarder. Spooling the line slows down the line speed. The impatient Hooktender gave the signal again and even a third time in an attempt to hurry up the Yarder Operator. The Yarder operator noticed the cable get caught in the slash pile, but thought it was all right, since no whistle was blown to stop and he noticed the cable continued to move very slowly.

The hooktender and choker setter had not yet exited the vicinity of the tailhold as the skyline grew taut. They were in front of the tailhold stump, less than 15 feet away, and had just turned to move uphill to a safe spot, when the skyline broke free from the slash pile and whipped outward and back. The heavy cable struck the hooktender in his chest, knocking him into the choker setter. The choker setter sustained a fractured arm. The hooktender rolled downhill about 20 feet, unconscious.

The call of a man down brought the whole crew of eight to the scene, plus the employer and landowner who were also onsite. The victim was put on a stretcher and carried to the road. He regained consciousness, complained of intense pain, jumped up and immediately fell, no longer breathing. Resuscitation efforts were unsuccessful. Local ambulance personnel arrived and transported the victim to a landing site for a life-flight helicopter. A flight nurse pronounced him dead at the scene.

There were concerns that personal factors may have contributed to the behavior that led to the incident. There were reports that the victim was experiencing problems in his personal life, and the employer had offered counseling. The victim had recently worked a record number of days in a row. On the morning of the incident, the victim reported to a coworker that he felt hungover. The medical examiner report showed a detectable level of methamphetamine in the victim's blood.

## **RECOMMENDATIONS/DISCUSSION**

### **Recommendation #1: Where possible, string lines to avoid hang-ups, and always position yourself in the clear of all lines being moved.**

Jumping lines is a common practice to save time during road changes. Although hang-ups are best avoided, both for timeliness and safety, obstructions are common and not always predictable. The yarder operator in this incident interpreted the obstruction as a normal event that did not require correction in the path of the line.

In all cases of jumping a skyline to a new tailhold, the excessive slack in the cable produces a potential hazard. While being drawn taut, a skyline cable can unexpectedly spring forward when it breaks free of an obstruction. Workers should be certain to stand in the clear before a signal is given to tighten any line. This incident illustrates that workers need to stand in the clear a sufficient distance to avoid the reach of the slack in the cable, and position themselves behind rather than in front of the tailhold. Even when standing opposite the direction of a line being tightened, workers should position themselves beyond the reach of the slack, since a line that breaks free of an obstruction will whip backward almost as far as it whips out.

**Recommendation #2: The hooktender must plan operations in advance and effectively communicate with coworkers to assure the safety of the logging crew.**

All operations at a logging site must be planned in advance, and a competent person must evaluate and correct potential hazards to minimize danger to workers. Advance planning provides an opportunity to pool intelligence among experienced crew members. Changes to a plan must be communicated effectively to all members of the logging crew to assure that workers understand what is expected. In a yarding operation, the hooktender is responsible to supervise the safety of the logging crew and set an example for others. In this incident, the original plan to move the tailhold was changed by the hooktender without advance planning and communication among the entire crew.

**Recommendation #3: Employers and employees should avoid extended work schedules and drug and alcohol use during work hours, to reduce the risks created by fatigue or impairment.**

The history of long hours worked and the finding of methamphetamine in the victim's blood by the medical examiner, raises the question whether or not fatigue or drug use were significant contributing factors. Undoubtedly, methamphetamine use is a growing public health problem in Oregon, but the impact on workers and workplace safety remains unexplored.

Fatigue is often a suspect in cases of occupational fatality, and may be a consequence of substance use, as in a worker falling off a ladder after a drug or alcohol binge the night before. A recent NIOSH review of the literature showed that in 16 of 22 studies addressing general health effects, extended work hours were associated with poorer perceived general health, increased injury rates, more illnesses, or increased mortality. A pattern of deteriorating performance on psychophysiological tests as well as injuries while working long hours was observed across study findings, particularly with very long shifts and when 12-hour shifts combined with more than 40 hours of work a week. Four studies that focused on effects during extended shifts reported that the 9th to 12th hours of work were associated with feelings of decreased alertness and increased fatigue, lower cognitive function, declines in vigilance on task measures, and increased injuries.

In contrast to alcohol, the effects of methamphetamine on performance are inconsistent, largely because methamphetamine may actually improve performance for many hours during use.

Habitual or excessive use of methamphetamine, however, can produce disorientation and agitation, and in heavy long-term use, paranoid psychosis. In a hazardous work environment, the disruption of clear mental processes may be more dangerous than fatigue. Once the stimulant effect of the drug wears off, the user is exposed to extraordinary fatigue, both mentally and physically. Neither condition, during or after use of the drug, is tolerable when a clear mental state is necessary for safety.

## REFERENCES

- OR OSHA Division 7. (2003). *Forest Activities*. Salem OR: Department of Consumer and Business Services.
- Brecher, E.M. & Editors of Consumer Reports. (1972). *Licit and Illicit Drugs*. Boston: Little, Brown.
- National Highway Traffic Safety Administration. (2002). *Alcohol* [Traffic Safety Facts]. Available online: [www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2002/2002alcfacts.pdf](http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2002/2002alcfacts.pdf)
- National Institute for Occupational Safety and Health. (2004). *Overtime and Extended Work Shifts: Recent Findings on Illnesses, Injuries, and Health Behaviors*. U.S. Department of Health and Human Services. Available online: [www.cdc.gov/niosh/docs/2004-143/pdfs/2004-143.pdf](http://www.cdc.gov/niosh/docs/2004-143/pdfs/2004-143.pdf)
- Sheridan, J., Bennett, S., Coggan, C. et al. (2004). *Injury and Other Harms Associated with Methamphetamine Use: A Review of the Literature*. Auckland NZ: Injury Prevention Research Centre, University of Auckland. Available online: [www2.auckland.ac.nz/ipc/pdf/cpr98.pdf](http://www2.auckland.ac.nz/ipc/pdf/cpr98.pdf)
- Oregon loggers: <http://www.oregonloggers.org/ForestryLinks.htm>
- NIOSH: <http://www.cdc.gov/niosh/injury/traumalog.html>
- Oregon State University College of Forestry: [http://www.cof.orst.edu/pubs\\_products.php](http://www.cof.orst.edu/pubs_products.php)
- Glossary: <http://www.pfmt.org/glossary/publication/s.htm>
- OSHA: <http://www.dol.gov/workingpartners/T>

## GLOSSARY

**Chaser:** Member of a logging crew who unhooks the logs at the landing and does other odd jobs.

**Choker setter:** Person in a logging operation who places the choker around the log to be hauled to the landing; one who attaches chokers to logs in the woods for the skidding unit; beginning job for novice loggers.

**Hooktender:** Typically the highest-ranking hourly employee; foreman in a yarding operation, responsible for operation layouts and rig ups, to include placement of skyline.

**Jumping:** In this instance, the practice of moving a skyline cable directly to a new tailhold without re-spooling the skyline back up to the tower and then back down in a straight line to the new location.

**Landing:** Flat ground where logs are yarded and loaded on transport; a collection point for logs.

**Layout:** Position of the running lines in a cable yarding system

**Rigging:** Cables, blocks, and other equipment used in yarding logs.

**Rigging slinger:** A member of a yarding crew, whose chief duty is to oversee the choker setters; determines sequence of logs to be yarded, according to guidelines established by hooktender; issues directions to crew regarding logs to be yarded, positioning and securing of chokers, and position of crew during movement of logs; signals yarding engineer to control positioning of choker cables for setting and yarding of logs.

**Skidder:** Self-propelled machine designed to transport trees or parts of trees by trailing or dragging.

**Skyline:** Cable stretched taut between a spar tree and a tailhold and used as a track for a skyline carriage.

**Skyline road:** Area bounded by the length and lateral yarding width of any given skyline setting.

**Slash pile:** An accumulation of brushy debris and branches gathered into a pile.

**Tailhold:** In cable logging, the anchorage at the outer end of the skyline away from the landing.

**Yarder:** System of power-operated winches used to haul logs from a stump to a landing.

## For More Information

The Center for Research on Occupational and Environmental Toxicology at Oregon Health & Science University performs Fatality Assessment and Control Evaluation (FACE) investigations through a cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH), Division of Safety Research (DSR). The goal of these evaluations is to prevent fatal work injuries in the future by studying the working environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

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