MIFACE Investigation #06MI066

Subject: Logger Killed When Struck By Lodged Tree That Fell

Summary

On June 20, 2006, a 48-year-old male logger was killed after he was struck in the back by a tree that fell onto him. His primary job function was that of a mechanical harvester operator. At some point, while working alone, the decedent attempted to fell a 20-inch diameter tree with a chain saw. The tree was not properly notched. This tree fell as directed by the notch and became lodged on a small branch in a nearby standing tree. The lodged tree was not removed prior to the decedent beginning delimbing work on another felled tree on the ground, which was in the fall path of the lodged tree. While the decedent was delimbing the tree on the ground with a chainsaw, the lodged tree fell, striking him in the back. His chainsaw was last heard running at about 1:30 p.m. A fellow logger walked to the incident area at approximately 5:20 p.m. and found the decedent's head and neck pinned against the tree he was delimbing by the tree that fell onto him. (Figure 1) The site supervisor called 911. When emergency response arrived, the logger was declared dead at the scene.

Figure 1. Location of decedent kneeling on ground and pinned by fallen tree

RECOMMENDATIONS

- Logging employers should develop, train employees in, and ensure the practice of safe felling procedures, such as but not limited to, a prohibition for working under "danger" trees and chain saw tree-felling techniques.
- Logging employers should develop a procedure to check on the safety of fallers and buckers working beyond the hearing range of coworkers at regular intervals.
- Employers should provide employee safety and health training as prescribed by appropriate MIOSHA standards.

Key Words: Logging, Struck By, Lodged Tree

INTRODUCTION

On June 20, 2006, a 48-year-old male logging equipment operator was killed after he was struck in the back by a tree that fell onto him. On June 21, 2006, MIFACE investigators were informed by the Michigan Occupational Safety and Health Administration (MIOSHA) personnel who had received a report on their 24-hour-a-day hotline, that a work-related fatal injury had occurred and the decedent had died the previous day. On August 24, 2006, MIFACE interviewed the site supervisor at the incident scene. During the course of writing this report, the death certificate, medical examiner's report, police report, and MIOSHA file and citations were reviewed. Pictures used in this report are courtesy of the responding police department.

The company for whom the decedent worked had been in business for 35 years and cut approximately 70 percent timber via contract and 30 percent on the open market. The firm was a certified Michigan master logger firm. The decedent worked as a logger/mechanical harvester operator and was working full time on an hourly basis. The company employed between 14 to18 individuals, depending upon the time of year and work contracted. The work shift began at 6:00 a.m. and ended at 5:30 p.m. The decedent had worked for the company on and off for approximately 15 years. He had currently been with the company for two and one-half months. The decedent had been in the logging business for about 20 years and was considered by his peers and the firm to be an accomplished logger.

The employer's safety program was derived from an industry-sponsored program. The safety program did not have specific safety rules and procedures in place for delimbing operations. The company did not have a health and safety committee. Monthly safety meetings were held with employees, although due to the busy time of year, the safety meetings were sometimes missed or the time allowed for the meetings was very short. At the time of the incident, the company did not have a written disciplinary procedure in place for safety and health policy violations. A written disciplinary policy was developed after the incident. The employer provided approximately two days of safety training per year and maintained the training records. Three weeks prior to the incident, the employer stated that a safety meeting had been held to discuss the dangers of lodged trees. The employer stated he had given verbal warnings, but had not documented these warnings, and that the decedent had received training that specifically addressed delimbing and working under hung up trees.

MIOSHA issued the following alleged Serious citations referencing MIOSHA General Industry Safety Standard, PART 51, LOGGING, at the conclusion of their investigation.

- Rule 5111 - Employer did not review MIOSHA Part 51 rules with each new employee.
- Rule 5119(3)(c) - Employer did not provide training for each employee, including supervisors, on the recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control the hazards.

- Rule 5156(1) - Employer did not ensure that the notch or undercut was large enough, about one-third of the diameter, to safely guide the tree and reduce the possibility of the tree splitting.
- Rule 5114(5) - Employer did not assure that each employee, including supervisors, received or had first aid and cardiopulmonary resuscitation (CPR) training that was in compliance with the requirements specified in subrule (11) of this rule.
- Rule 5114(6) - Employer did not assure that each employee received first aid training at least once every three years and received CPR training at least annually.

INVESTIGATION

The jobsite was a remote wooded area about four and one-half miles from a hardtop road. The terrain was nearly flat with some small, rolling hills. The worksite was an 80-acre parcel on private land. The clear-cut hardwood timber operation was almost completed; only a few trees remained standing. At the incident site, skidders (mules), harvesters, and a bundling system were in operation. Some manual tree felling was also conducted.

The company had been at the site for approximately two months. The decedent had been at the site for approximately one month. The decedent was a member of a five-person crew, the foreman, two skidder operators, and two harvester operators. Wind speed (2-15 mph) was not considered to be a factor.

The crew arrived at work at approximately 6:00 a.m. The foreman on site directed all employees to work in separate areas. The site supervisor was present throughout the day but there was no visual or audible system set up on the site, and the supervisor did not check on the employees. The supervisor had last seen decedent at 7:15 a.m. when he gave him the chainsaw and some gas. He did not see him for the rest of the day.

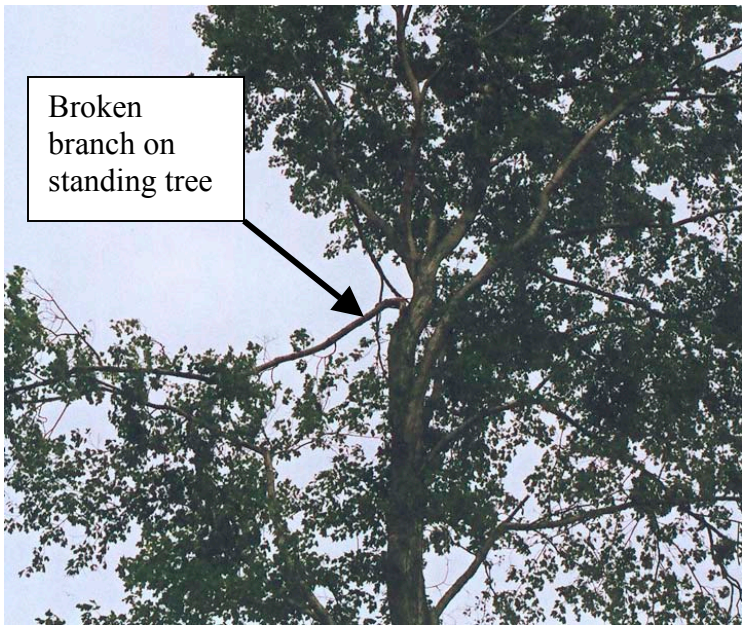

Figure 2. Broken standing tree branch that supported tree that struck decedent

The decedent was wearing hearing protection, steel-toed boots, a hard hat, and chaps over his clothing. He was working alone and was assigned to operate a Hydro-Ax brand harvester. He had

operated the harvester during his past employment for the company at which time he was a licensed operator. He had not received refresher training on the harvester operation and was operating the machine on an expired license.

The decedent was felling the trees with a chainsaw ("the old way") because he was permitted to do so if the job was on schedule. The decedent cut an improper notch in the 20-inch diameter, 80-foot tall tree. The notch was not properly directed away from an adjoining tree. The notch was less than one and one-half inches deep. Because of the size of the tree, the notch should have been cut six to seven inches deep. The backcut was proper and left approximately one and one-half inch hinge. The tree fell as directed by the notch into the only standing tree left in the area that was located 20 feet away. As it fell, it became lodged on a branch of this standing tree (Figure 2). The decedent was working approximately 30 feet away from where the lodged tree was resting against the standing tree.

The next series of events are not known. The MIOSHA file stated the facts were inconclusive. The police report stated that the decedent then cut two more trees and may have attempted to knock down the lodged tree, but the lodged tree did not come down. The harvester was located approximately 30 yards from the incident scene.

While the tree was still lodged in the standing tree, the decedent began to delimb a tree that was on the ground in the fall path of the lodged tree. Coworkers stated that they last heard the chainsaw running at about 1:30 p.m. Another employee who was working about 40 yards away from the decedent saw trees falling at approximately 1:30 p.m. Because he had not come out from his work area at the end of the day, a fellow logger checked on the decedent at approximately 5:20 p.m. His coworker found him face down, kneeling against the tree he was delimbing. The tree that fell and struck him was located across his shoulders, neck and head. He was pinned against the trunk of the tree he was delimbing. He showed no signs on life. The site supervisor called 911, and when emergency response arrived, he was declared dead at the scene. A heavy equipment picker was used to lift the tree from the decedent.

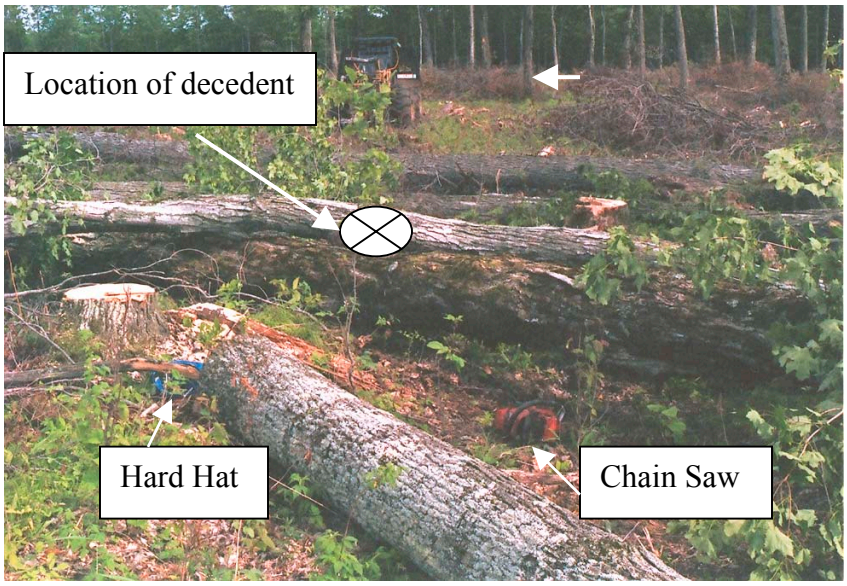

Figure 3. Decedent, hardhat and chainsaw location

Police found the decedent's chain saw just to the north of him and his hard hat just to the northeast (Figure 3). Both items were in close proximity, and it appeared that the chainsaw was in decedent's hand and the hard hat was on his head just before the tree struck him.

The supervisor stated that the decedent liked to cut with a chain saw. He stated that the decedent did this at times because the Hydro Ax he was operating cut trees of a smaller diameter. When the trees were bigger, the decedent would either leave them for other machines, or get out his chain saw and cut them down and limb them.

After the incident, the firm developed a health and safety manual. Included in the manual were the following provisions:

- Prohibition of chainsaw use for hand felling. If it is decided that chainsaws will be used in the future, employee training will be conducted using a knowledgeable instructor.
- Each machine will have a two-way radio for communication. If the employee gets out of the machine they must make a call to another employee and let them know when they are getting out and when they have returned to the machine.
- If an employee is working alone, the employee must call and let the supervisor know they are out of the woods and going home when leaving at the end of the day.

CAUSE OF DEATH

The death certificates stated that the cause of death was massive cerebral trauma due to a closed head injury. Other significant conditions contributing to his death was blunt chest trauma. Toxicological tests were not performed.

RECOMMENDATIONS/DISCUSSION

- Logging employers should develop, train employees in, and ensure the practice of safe felling procedures, such as but not limited to, a prohibition for working under "danger" trees and chain saw tree-felling techniques.

Although the employer had provided employee training during a safety meeting about one type of danger tree (lodged tree), the employer did not have written safe felling procedures in place and did not conduct the inspections necessary to ensure that safe felling procedures were being followed. MIOSHA defines a "danger" tree as a standing tree that presents a hazard to employees due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem or limbs, and the direction and lean of the tree. Fallers are exposed to many hazardous conditions and danger trees in their work environment, such as snags, spring poles, widow makers (including lodged trees), stalled trees, and throwbacks.

Handling lodged trees in logging operations are outlined in MIOSHA General Industry Safety Standard, Logging, Part 51. Part 51, Rule 5153 requires that "a person shall not work under a lodged tree. A lodged tree shall be pulled or pushed down as soon as possible by mobile equipment in a manner which keeps an employee from being struck by the tree". MIOSHA requires that each danger tree must be felled, removed or avoided. Each danger tree, including lodged trees or snags be felled or removed using mechanical or other techniques that minimize employee exposure before work is commenced in the area of the danger tree. If the "danger" tree is not/can not be removed, the tree should be marked, and no work should be conducted within two tree lengths of the tree.

Conducting regular safety inspections of all logging tasks (among other safety-related responsibilities) by qualified individuals will help ensure that established company safety procedures are being followed. Scheduled and unscheduled safety inspections of tree faller work sites clearly demonstrate to employees that their employer is committed to the safety program and to the prevention of occupational injury.

Based upon decedent's logging experience and training, his employer stated that he must have been aware of the hazard presented by the lodged tree. Assuming that the decedent used the Hydro Ax to attempt to push the lodged tree out of the standing tree, and failing to do so, he may have felt "safe" and worked in the high risk fall path. In this incident, the hazardous situation could have been abated by immediately felling the standing tree with the Hydro Ax. If the Hydro Ax was not capable of felling the standing tree, another machine operator with equipment capable of felling the tree could have been contacted.

Additionally, at the time of the incident, the decedent was one of the few employees who were permitted to fell a tree with a chainsaw; other employees were prohibited from doing so. The inadequate notch cut by the decedent was a contributing factor in this tragic incident. After the incident, the employer has made changes to the company policy regarding chainsaw use.

- Logging employers should develop a procedure to check on the safety of fallers and buckers working beyond the hearing range of coworkers at regular intervals.

The decedent was working alone in an isolated area and did not have visual or voice contact with other coworkers. Although the chain saw was heard, the decedent was out of visual or voice contact range. The employer did not have a system for employees assigned to work alone in remote or isolated areas to report to someone periodically by voice communication, such as radio or telephone, and did not designate a person to check on lone employees' safety at reasonable intervals.

Part 51, Rule 5113 states that, among other requirements, that an employer may not permit an employee to work alone on felling or skidding operations. Part 51, Rule 5152 states that "a faller or bucker shall not work beyond hearing range of another employee unless a procedure has been established for periodically checking on the faller or bucker during the course of the work day." After the reporting procedures are developed, all persons involved in working alone must be advised of the reporting procedures to be

followed. Written safe work procedures should include provisions for checking the wellbeing of every faller and bucker at the operation throughout the workday. Several options to check on isolated fallers and buckers are: (a) the "buddy" system, (b) communication checks via tw0-way radio or site inspection at least every 20-30 minutes.

- Employers should provide employee safety and health training as prescribed by appropriate MIOSHA standards.

The employer did not train employees as specified in the MIOSHA Logging standard. Part 51, Rule 5119 requires employers to train employees in (among other requirements):

- the safe performance of assigned work tasks,
- the recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control the hazards,
- the recognition, prevention and control of other safety and health hazards in the logging industry, and the procedures, practices and requirements of the employer's worksite.

Although the decedent had many years of logging experience, the tragic incident still occurred. Safety training must be incorporated into the business plan, not treated as an "add on" in a business philosophy. The employer had safety meetings scheduled each month. If the company workload was heavy, the safety meetings were sacrificed or rushed through. Businesses that make safety a priority have decreased down time, improved profits, lower worker compensation costs, and improved employee morale.

Paraphrasing the employer's comments to the MIFACE investigator, "A club is usually something someone wants to join. I am now in the unenviable club of having someone die at work. I hope that my experience will show the importance of safety and safety training and prevent another employer from joining this club. I know it will renew our company's emphasis on safety and safety training."

REFERENCES

MIOSHA standards cited in this report may be found at and downloaded from the MIOSHA, Michigan Department of Labor and Economic Growth (DLEG) website at: www.michigan.gov/mioshastandards. MIOSHA standards are available for a fee by writing to: Michigan Department of Labor and Economic Growth, MIOSHA Standards Section, P.O. Box 30643, Lansing, Michigan 48909-8143 or calling (517) 322-1845.

The MIOSHA Consultation Education and Training (CET) Division offers free help in establishing or improving your safety program. MIOSHA CET, 7150 Harris Drive P.O. Box 30643, Lansing, MI 48909-8143. Phone: (517) 322-1809. Fax: (517) 322-1374. Internet Address: www.michigan.gov/cis/0,1607,7-154-11407_15317---,00.html.

- MIOSHA General Industry Safety Standard Part 51: Logging
- Kentucky FACE Investigation Report #97KY122. Dislodged Tree Strikes Logger.
  Internet Address: www.cdc.gov/niosh/face/stateface/ky/97ky122.html
- NIOSH Alert, May 1995. Preventing Injuries and Deaths of Loggers DHHS (NIOSH) Publication No. 95-101.
  Internet Address: www.cdc.gov/niohs/logging.html

MIFACE
Investigation Report # 06 MI 066
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To improve the quality of the MIFACE program and our investigation reports, we would like to ask you a few questions regarding this report.

Please rate the report using a scale of:

Excellent	Good	Fair	Poor
1	2	3	4

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Excellent	Good	Fair	Poor
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Was the report…	**Excellent**	**Good**	**Fair**	**Poor**
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