Timber Cutter Dies After Being Pinned by The Tree He Was Felling in West Virginia

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SUMMARY

On July 30, 2001, a 47-year-old male tree feller (the victim) died of injuries sustained when he was pinned to the ground by the tree he was felling. The victim was felling trees on terrain with a 40% slope. He was in the process of felling a poplar, which was approximately 20 inches in diameter at breast height (DBH) and 100 feet tall. It was located 8 feet down hill from a large and lengthy pile of scrap timber and brush which obstructed his escape path. He made a conventional face notch which measured 50 degrees and whose length was 76% of the tree's diameter. The notch was oriented to direct the tree approximately 30-40 degrees to the right of directly down hill. The chosen fall path was partially obstructed by the top of a 60 foot tall leaning walnut tree with a 18″ DBH and whose base was measured to be 37 feet from the tree being felled. After making the face notch the victim began to make a bore cut but jammed the saw while doing so. Unable to remove the saw, he disassembled the saw leaving the bar and chain imbedded. He asked a dozer operator who was working with him to bring over another saw. Continuing with his bore cut he left two small dog eared hinges. After making his final cut, the victim retreated approximately 6 feet along the obstructed escape path. As the falling tree contacted the walnut, it cantilevered into the air and swung towards the victim, striking and pinning him to the ground. Witnessing the incident, the dozer operator responded by starting to cut the tree off of the victim but decided to summon help instead. He drove his pick-up truck approximately two miles to the nearest house. He called 911and asked the homeowner to wait for the ambulance. A volunteer fireman heard the call over his radio and responded to the site before EMS arrived. Approximately 20 minutes passed from the time the incident took place until the fireman and the dozer operator reached the victim. The fireman checked for vital signs and finding none, informed the dozer operator that the victim was dead. Shortly thereafter the EMS and deputy sheriff arrived. The victim was transported to the nearest medical facility where he was pronounced dead.

The WV FACE Investigator concluded that, to reduce the likelihood of similar occurrences, employers should:

- ensure that tree fellers prepare an escape path and move a safe distance from the base of the tree.
- ensure that tree fellers identify or clear an unobstructed fall path and landing zone prior to felling.
- develop, implement, and enforce a company policy which prohibits the felling of timber when the development and use of an escape path and clear fall path is not feasible.
- ensure that tree fellers utilize proper directional felling techniques.

INTRODUCTION

On July 30, 2001, a 47-year-old male tree feller (the victim) died of injuries sustained when he was pinned to the ground by the tree he was felling. On July 31, 2001, the West Virginia FACE Investigator was notified of the death by an employee of the West Virginia University Center for Rural Emergency Medicine. The West Virginia FACE Investigator immediately contacted the Division of Forestry (WVDOF). The Investigator reviewed the incident with the WVDOF representative, who then accompanied

the Investigator to the site where an on-site investigation was conducted on August 6, 2001. The logging company's owner and one eyewitness were interviewed. The incident site was examined and photographed. Other informational sources and contacts included: death certificate, medical examiner's report, newspaper articles, and the WVDOF.

The employer in this incident was a commercial logging company that had been in business for nine years and employed three employees. Two employees were present the day of the incident. The land was privately-owned. The unmarked 18 acre timber stand was being selectively logged for saw timber and pulpwood. It was reported that the operation was on schedule.

The owner did not hold Certified Logger status in West Virginia and therefore was operating without a current timber license. Additionally, the operation was being run without the required DOF applications and subsequent approvals. [Note: The Logging Sediment Control Act of West Virginia (1992) requires that each timbering operation in West Virginia be supervised by a certified logger. To become a certified logger, an individual is required to successfully complete training and pass a test for best management practices (a soil erosion prevention plan) and chain saw safety as well as possess a current first aid card.[1]]

There was no written safety program and a company safety officer had not been designated. The employer (owner) did not indicate that formal company-specific training was provided. It was reported that each man was responsible for his own safety. There was no employee with current first aid/CPR status on the site. The employer had never experienced a similar incident, and no fatalities had occurred in the company.

The victim's job at the time of the incident was felling trees. He had been a logger for at least twenty years. It was reported he had never attended the WVDOF's chainsaw safety workshop or other formal safety-related training programs. At the time of the incident, the victim was not wearing a hard hat, eye protection, or hearing protection. He was wearing chaps and boots. He had been cutting 3½ hours prior to the incident.

INVESTIGATION

On July 30, 2001, a 47 year-old male tree feller (the victim) died of injuries sustained when he was pinned to the ground by the tree he was felling. The victim was felling trees on terrain with a 40% slope. He was in the process of felling a poplar tree, which was approximately 20 inches in diameter at breast height (DBH) and 100 feet tall. It was located 8 feet down hill from a large and lengthy pile of scrap timber and brush which obstructed his escape path (see Figure 1). He made a conventional face notch which measured 50 degrees and whose length was 76% of the tree's diameter. The notch was positioned to direct the tree approximately 30-40 degrees to the right of directly down hill. The chosen fall path was partially obstructed by the top of a 60 foot tall leaning walnut tree with a 18″ DBH and whose base was measured to be 37 feet from the tree being felled (see Figure 2). After making his face notch, he began to make a bore cut but jammed the saw while doing so. Unable to remove the saw, he disassembled it, leaving the bar and chain imbedded. He asked a dozer operator who was working with him to bring over another saw. Continuing with his bore cut, he left two small dog-eared hinges (see Figure 3). After making his final cut, he retreated approximately 6 feet along the obstructed escape path. As the falling tree contacted the walnut, it cantilevered into the air and swung towards the victim, striking and pinning him to the ground. He was pinned across the back (see Figure 4). Witnessing the incident, the dozer operator responded by starting to cut the tree off of the victim, but decided to summon help instead. He drove his pick-up truck approximately two miles to the nearest house. He called 911 and asked the homeowner wait for the ambulance. A volunteer fireman heard the call over his radio and responded to the site before EMS arrived. Approximately 20 minutes passed from the time the incident took place until the fireman and the dozer operator reached the victim. The fireman checked for vital signs and finding none, informed the dozer operator that the victim was dead. Shortly thereafter the EMS and deputy sheriff arrived. The victim was transported to the nearest medical facility where he was pronounced dead.

CAUSE OF DEATH

The medical examiner's report listed the immediate cause of death as traumatic asphyxia and crushing chest injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure that tree fellers prepare an escape path and move a safe distance from the base of the tree.

Discussion: Preparing an escape path before felling any tree is imperative for a safe felling operation. Doing so will allow the feller to quickly reach a safe distance from the falling tree. CFR 1910.266h(2)(I) requires that before felling is started, the feller shall plan and clear an escape path, and once the back cut has been made, the feller shall immediately move a safe distance away from the tree on the escape path.[2] The victim was unable to establish a proper escape path because of the large and lengthy pile of scrap timber and brush located behind him. Due to this obstruction, the victim could only move 6 feet from the base of the tree. Having established an escape path and retreating the recommended diagonal 45 degrees back from the expected felling line a distance of approximately 20 feet would have placed the victim a safe distance from the butt's erratic movement due to the tree's contact with the walnut which was obstructing the fall path.

Recommendation #2: Employers should ensure that tree fellers identify or clear an unobstructed fall path and landing zone prior to felling.

Discussion: Identifying or clearing an unobstructed fall path and landing zone is also important for a safe felling operation. Ensuring an unobstructed path and a clear landing zone will prevent the falling tree from making contact with other trees. Contact can change the natural fall path. It often creates a pivot point or fulcrum which in turn makes butt movement less predictable. CFR 1910.266h(2)(II) requires that before felling is started, the feller shall take into consideration the location of other trees so a hazard is not created.[2] The victim had a clear fall path and landing zone directly down hill of the tree being felled However, the orientation of his face notch indicated that he chose not to use that clearing. Instead, the notch was oriented to direct the tree approximately 30-40 degrees to the right of directly down hill. It was reported that this choice may have been made to give greater ease in removing the timber when angled to the skid road, as opposed to lying perpendicular to the road. The chosen fall path and landing zone were partially obstructed by the walnut tree's top and the victim did not attempt to remove the obstruction prior to felling. If the clearing had been used or the obstruction removed from the chosen fall path, the tree's erratic movement may have been mitigated, which would in turn have prevented contact between the victim and the felled tree.

Recommendation #3: Employers should develop, implement, and enforce a company policy which prohibits the felling of timber when the development and use of an escape path is not feasible.

Discussion: The evaluation of tasks to be performed at the work site form the basis for the development, implementation, and enforcement of a safety program. The key elements of the program should include, at a minimum, training in hazard identification and the avoidance and abatement of these hazards. Specifically, the program should address the steps to be taken in the event of identifying a tree whose location does not allow the feller to utilize all the safety measures necessary to ensure a safe fell. In this instance, the victim did not have the ability to establish an escape path due to the large and lengthy pile of scrap timber and brush which was located just uphill from the tree. Establishing a safety program which would have communicated to the victim his responsibilities and the actions to be taken when encountering felling situations that are unusual and present a hazard may have changed the victim's behavior concerning unsafe work practices. Specifically, the policy could have communicated the requirement to bypass and flag the tree until the brush pile could be removed thereby allowing a safe retreat.

Recommendation #4: Employers should ensure that tree fellers utilize proper directional felling techniques.

Discussion: Directional felling is the safest manual felling method of getting trees on the ground. The proper notch directs the tree's fall and the hinge wood keeps the tree under control as it falls. CFR 1910.266h(2)(v) requires that a directional undercut be made, and 1910.266h(2)(vi) requires that a back cut be made leaving sufficient hinge wood to hold the tree to the stump during most of its fall so the hinge is able to guide the tree's fall in the intended direction.[2] The victim did not utilize proper directional felling techniques. Having left the proper amount of hinge wood, as opposed to the small dog eared hinges, may have ensured that the tree would have stay attached to the stump even after contacting the obstructing walnut tree. Consequently, the tree was free to react to the forces placed upon it by the obstructing walnut tree. In doing so, it cantilevered and pivoted towards the victim.

REFERENCES

1. West Virginia Logging Sediment Control Act, 1992.
2. Office of the Federal Register: Federal Register, Vol. 59, No. 196, 29 CFR 1910.266.

ILLUSTRATIONS

Figure l. The photo shows the relationship between the stump, intended direction of fell (solid arrow), the victim's retreat and final resting place (segmented arrow). Note the limited escape path (due to the scrap timber in the foreground.)

Figure 2. The photo shows the obstructed fall path and landing zone. The arrow points to the walnut whose top was obstructing the fell.

Figure 3. This photo shows the two small dog-eared hinges that remained after the victim's final cuts. Leaving the proper amount of hinge wood not only controls the direction of the fell but anchors the butt to the stump when the tree makes contact with other during the fell.

Figure 4. This photo shows the section of the tree which pinned the victim across his back. The white arrow represents the approximate location of his head.

FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The WVU Center for Rural Emergency Medicine, through a contract with the West Virginia Department of Health and Human Resources and Bureau for Public Health, conducts investigations on the causes of work-related fatalities within the state. The goal of this program is to prevent future fatal workplace injuries. West Virginia FACE intends to achieve this goal by identifying and studying the risk factors that contribute to workplace fatalities, by recommending intervention strategies, and by disseminating prevention information to employers, employees, trade associations, unions, equipment manufacturers, students, teachers, and others with an interest in workplace safety.

Please use information listed on the Contact Sheet on the NIOSH FACE website to contact In-house FACE program personnel regarding In-house FACE reports and to gain assistance when State-FACE program personnel cannot be reached.

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