



Event Type: Chainsaw Kickback Injury

Date: October 31, 2023

Location: McCoy Road Hazard Tree Abatement Project,
Detroit Ranger District, Willamette
National Forest, Oregon

The Story and Lessons from this Chainsaw Kickback Incident

Incident Overview

The 2020 fires burned nearly 40 percent of the Detroit Ranger District, resulting in significant impacts to roads, trails, and recreational sites. There are approximately 200 miles of fire-damaged roads on the Detroit Ranger District that require hazard tree mitigation, road repair, or both. The initial phase of this disaster-recovery effort involves the mitigation of hazard trees along priority road systems and developed recreation sites.

These hazards must be mitigated before the closed areas can be reopened to the public. McCoy Road was designated a high priority area by the District Leadership Team for both natural resource and public access objectives.

The McCoy Road Hazard Tree Abatement Project, while a part of the broader fire recovery effort, has also provided a valuable opportunity to many agency sawyers from different management units to participate in saw operations. The involvement of individuals in the hazard tree felling efforts not only helps them enhance their saw skills but also contributes to the maintenance of proficiency. This creates a win-win opportunity for both the local unit and agency sawyers. This collaboration also ensures a continuous improvement of skills and knowledge, while simultaneously contributing to the restoration and resilience of the fire-affected landscape.

**The incident occurred when the sawyer was attempting to complete
a modified boring back cut on a 36-inch diameter Douglas fir tree.**

Accident Overview

On the afternoon of October 31, 2023, a U.S. Forest Service smokejumper was injured during the McCoy Road Hazard Tree Abatement Project on the Willamette National Forest. The incident occurred when the sawyer was attempting to complete a modified boring back cut on a 36-inch diameter Douglas fir tree.

Unfortunately, during the cut, the sawyer unintentionally caused the chainsaw bar tip to come into contact with the wood strap located on the offside and near the center of the tree. As a result, the guide bar kicked violently, exiting the back cut kerf and striking the sawyer in the posterior compartment on the upper right arm—resulting in a six-inch laceration.

Accident Narrative

The McCoy Road felling project had been ongoing throughout the month of October, with several groups of sawyers rotating in and out and working various schedules. On a mild Halloween day, two smokejumpers were working together, taking turns felling trees and serving as road guards. The work had been progressing smoothly. This was their third rotation of their second day on the project.

When sizing up a 36-inch diameter Douglas fir tree with a favorable lean, the sawyer developed a cut plan and opted to use a standard conventional undercut to create a notch. The tree would be felled with its natural lean by quartering it downhill on the slope. Additionally, they decided to utilize a variation of a boring back cut known as the “plunge-cut” method.

This method is typically employed when felling trees with a diameter that is more than twice the effective cutting length of the saw’s guide bar. However, in this particular situation, the sawyer was using a 32-inch bar to fell a tree that had a 36-inch diameter. The decision to use this specific technique was not based on the specific characteristics of the operation, but rather because it had proven to be a successful method in the past for felling trees.



Front of tree.

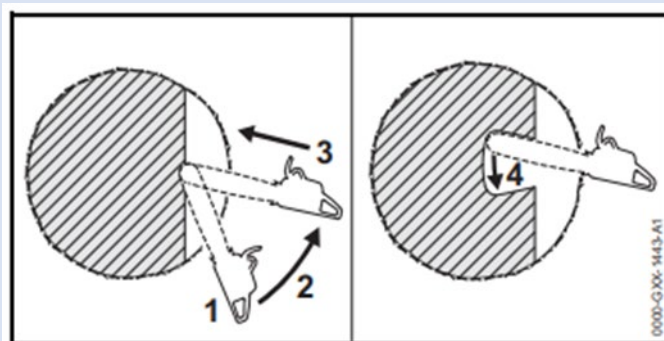


Back of tree.

The plunge-cut method is typically used to allow the sawyer to remove wood from the center of the tree that would otherwise be inaccessible to the guide bar during the back cut. It involves performing a plunge cut from the front of the tree after creating a large undercut.

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“It is crucial to note that this method is highly dangerous due to the use of the nose of the guide bar, which can result in a kickback. If you are inexperienced with a chainsaw, it is strongly advised not to attempt plunge-cutting.”

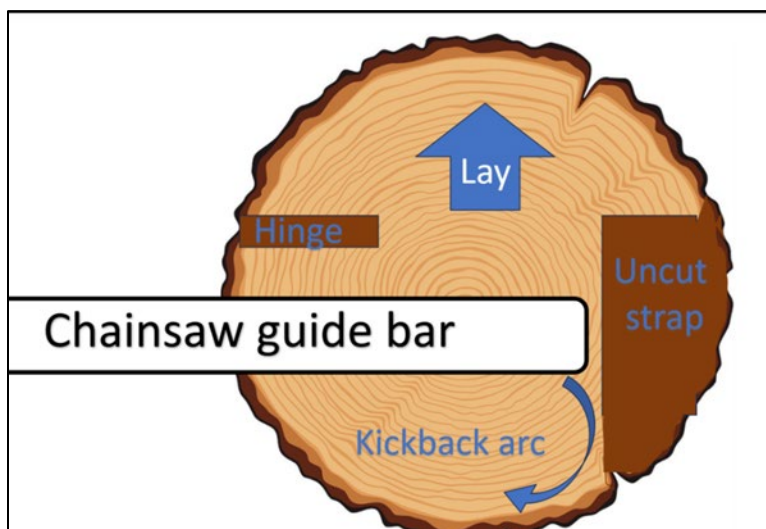


The plunge-cut method.

The Cutting Plan

In this incident, the sawyer initiated a horizontal plunge-cut starting from the back and center of the tree. This cut extended all the way through the hinge and out the undercut. As a result, a portion of the hinge located in the center of the tree was removed, leaving two uncut sections of the hinge on either side. Each side had a large strap of wood behind the hinge that extended along the bole of the tree on both sides.

The intention was to subsequently cut up each of these straps separately, ensuring that they reached the desired thickness for the hinge. Once this thickness was achieved, the tree would be felled as planned.

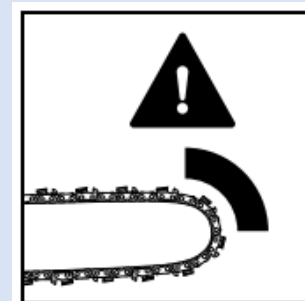


Cross-section of the cut plan that the sawyer used.

What is “Kickback”?

Kickback can occur when the moving chain near the upper quadrant of the bar nose comes into contact with a solid object or gets pinched. When the kickback reaction is stronger, it becomes more challenging for the operator to maintain control of the chainsaw.

There are various factors that can influence the occurrence and force of the kickback reaction. These factors include the speed of the chain, the speed at which the bar and chain make contact with the object, the location and angle of contact, the condition of the chain, and whether the chain is slowed or stopped by other factors (kickback danger zone).



To Reduce the Risk of Kickback Injury

- Never use a saw if the chain brake does not function properly.
- Always maintain a firm grip with two hands and your thumb wrapped securely around the front handlebar.
- Start any borecut with the bottom or attack portion of the bar.
- Avoid contacting any object with the upper quadrant of the bar nose.
- Maintain full throttle.
- Use a sharp, well-maintained chain.

The road guard had been observing the work being conducted on the hillside above them. They had noticed wood chips being thrown from the undercut as the guide bar penetrated the wood and sawdust was being broadcast downhill. The work was progressing as planned. There had been minimal traffic in the area.

However, just as the crash of the tree was anticipated during the back cut, a call came across the radio from the sawyer stating that they had been cut by the chainsaw. The road guard immediately left their post and began working their way up the slope.

During the back cut as the hinge wood was being set on one side, an unfortunate incident had just occurred. The sawyer accidentally caused the chainsaw guide bar to make contact with the strap wood, resulting in a kickback that was forceful enough to cause the guide bar to exit the back cut kerf and strike the sawyer on their upper right arm.

This entire sequence of events happened very swiftly, leaving the sawyer somewhat shocked and trying to comprehend what had just transpired. Initially, there was minimal to no pain or blood experienced.

Reacting promptly, the sawyer immediately dropped the chainsaw and began to assess the condition of their arm. As the back cut operation was left unfinished, the fir tree remained upright due to the secure hold provided by the uncut strap wood.

Examining their upper arm, the sawyer noticed a serious laceration there, in which blood had started to seep out. Realizing the severity of the injury, the sawyer applied direct pressure to the wound and promptly alerted the road guard of the situation. The sawyer then proceeded to make their way down the hill for further assistance.

After the injured sawyer and road guard met midway down the slope, just above the roadway, they decided to address the wound by applying a tourniquet. The sawyer had initially attempted to use their belt to create a makeshift tourniquet, but the belt was ineffective. They opted to use the Combat Application Tourniquet (CAT) from the trauma bag brought by the road guard.



The standing 36-inch diameter Douglas fir tree in the foreground is the tree in which the kickback occurred and injured the sawyer. Note the U.S. Forest Service road at the base of the hill.

“The tourniquet and associated pressure was much more painful than the laceration.”

Injured Sawyer

After being tightened, this tourniquet proved effective in stopping the blood flow. However, it quickly became the primary source of pain associated with the injury.

The initial injury occurred at 2:30 p.m. The CAT was applied ten minutes later. Dispatch was notified via radio and a plan was made to transport the injured sawyer by vehicle to the local ranger district office. Dispatch notified agency management and EMS per the project’s Emergency Communicatin Plan.

The district office had a landing zone for aircraft and would also serve as the rendezvous location with the responding ambulance. A local EMT monitoring the emergency radio traffic, drove out to meet them at the district office.

While driving the injured sawyer down canyon toward the ranger district office, with the bleeding stopped from the application of the tourniquet, the overall mood associated with the medical response deescalated. The driver no longer needed to worry about assisting with medical care and could focus on driving the vehicle safely.

After arriving at the district office, the responding EMT assessed the sawyer and took vitals. The initially ordered aircraft response was then canceled. Approximately 25 minutes after arriving at the district office, the ambulance arrived on scene and the injured sawyer was transported to the local area hospital with the road guard following close behind for the one-hour drive to the hospital.

Post Accident Care

At the hospital, the sawyer received exceptional care and underwent a series of medical treatments to stabilize their condition. After a thorough examination, it was determined that it was safe to remove the tourniquet, which had been applied for nearly two hours. The 6-inch wound was then sutured closed using 22 stitches.

Following the initial incident, one of the most stressful aspects for the sawyer was responding to the questioning that occurred during the intake process. It is crucial to provide specific answers that the hospital requires to properly initiate the OWCP (Office of Workers' Compensation Programs) process. The manner in which these questions are answered not only impacts the care given but also affects how the billing process will be handled.

To alleviate this stress, a Forest Service Hospital Liaison was promptly dispatched to assist the injured sawyer. The presence of this liaison brought great relief as they were well-versed in the OWCP process, knew how to answer the questions, and understood the necessary steps to be taken. Their role in the incident response provided the injured sawyer with reassurance that the administrative process was being handled correctly. This allowed the sawyer to refocus their attention on the recovery process, knowing that the necessary administrative tasks were being taken care of appropriately.

“Participating in the RLS process has been positive and cathartic. When something like this happens, it can be easy to feel defensive or react negatively to scrutiny. The way our meetings and communication have been handled through this RLS process has helped to allay those feelings. Being able to have a voice in this process and share our perspectives feels very positive. Those of us involved in this incident feel optimistic about this outcome. We are grateful to be able to pass along our experiences in the hopes of helping others in the future.”

RLS Participant

Lessons

- ❖ When formulating a cut plan, it is important to consider the specific characteristics associated with each saw operation. By taking these characteristics into account, you can develop a cut plan that aims to minimize complexities while achieving the desired result. It is crucial to remember that every situation is unique and necessitates a comprehensive procedural size-up.
- ❖ Tourniquets are important medical devices that can save lives when used correctly. It is essential to be familiar with their use and always have one readily available, preferably on your person, when operating a chainsaw.
- ❖ A tourniquet is utilized when direct pressure is insufficient to control bleeding, particularly in cases of arterial bleeding. When a tourniquet is the primary method employed to stop bleeding and there is a likelihood of long transportation times, it is crucial to carefully evaluate the potential consequences for the affected individual's life and limb. The application of a tourniquet can cause significant pain. Once it is applied, it should not be removed.

- ❖ Having a radio or another form of communication on your person is essential when operating a chainsaw outside the immediate shouting distance of other personnel. In this incident, being able to immediately notify others of an accident and call for help was beneficial in saving critical response time.
- ❖ The local unit requested additional road safety mitigations on segments of the McCoy Road during felling operations. This Forest Service road is currently closed by a Forest Order, however, there is limited permitted vehicle traffic by Forest Service staff, permitted researchers, and permitted access to private land. The mitigations considered for this segment of the road include signage, distances, certifications, and the number and type of road guards needed in different situations. During this incident, only one road guard was available, which may not have been adequate.
- ❖ The strong communication between affected employees at the local unit(s) and at the regional level was greatly appreciated. It played a crucial role in ensuring that notifications were promptly made to assist in the medical response efforts. Additionally, this open line of communication helped to put the individuals involved at ease during a challenging time.

This RLS was submitted by:

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[Hendrix Fire Chainsaw Cut 2018 | Wildland Fire Lessons Learned Center \(wildfire.gov\)](#)

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