



**Event Type:** Nighttime Tree Strike

**Date:** May 15, 2022

**Location:** Calf Canyon Fire, New Mexico

*The tree struck the Squad Leader in the head/hard helmet and back, driving him to the ground, resulting in trauma to the head, body, a lacerated tongue, and chipped teeth.*

## **Tree Strike During Nighttime Dozer Operations**

by

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### **Narrative**

Night shift operations for our Sawtooth Interagency Hotshot Crew included splitting the crew into two modules. Mod 2 had concluded a burnout operation protecting values while Mod 1 was engaged in prepping around structures and scouting further operations. Communications between the two groups were hit-and-miss due to the terrain in between them. Even so, both groups were checking in at regular intervals, which, at times, required repositioning for adequate communication over the radio.

After completion of the burnout, Mod 2 operations shifted to dozer line construction around additional identified values. During the dozer line construction, the Squad Leader, an experienced Heavy Equipment Boss (HEQB), moved ahead of the dozer on the proposed control line—with the perception that he had plenty of time and distance between he and the dozer—to safely let down a fence and allow access for the dozer to continue with the line construction.

#### **The Tree Strike**

As the Squad Leader arrived at the fence—at 0100 on May 15—he was struck by a roughly 40-foot/8-10-inch DBH ponderosa tree, knocking him unconscious. The portion of the tree that struck the Squad Leader was the top 10 feet and was roughly 5 inches in diameter. While the Squad Leader was wearing a headlamp that was turned on, it was not facing the dozer's direction.

The tree struck the Squad Leader in the head/hard helmet and back, driving him to the ground, resulting in trauma to the head, body, a lacerated tongue, and chipped teeth.

Per conversations after the incident, the Dozer Operator was not aware that the Squad Leader had moved in front of the machine and did not clearly see what happened as they were unable to see the Squad Leader's headlamp. The Dozer Operator suddenly saw the individual's hard helmet go flying down the hill at the same time the tree they had just pushed over fell to the ground.

The Dozer Operator stopped the machine and recognized that the individual had been struck, then quickly called the Assistant Superintendent who was a few hundred yards behind the dozer but was unaware the incident had occurred.

In less than a minute, the Assistant Superintendent (an EMT) was on scene and providing patient care. Based on mechanism of injury and the patient's unresponsive state, the Assistant Superintendent radioed for crew trauma

gear and TRS to the patient's location. Crew medical gear and additional crew personnel were on scene in three to five minutes.

After radioing for the crew trauma gear, the Assistant Supt. radioed direct to REMS 6 and Ambulance Medic 16—who were located nearby at DP 175—and had them come direct to the patient.

Overhearing broken medical radio traffic, I relocated and was alerted by the Assistant Supt. of the medical. The Assistant Supt. continued with initial communications and patient care. The Assistant Supt. then contacted Night Group 4 and transferred the Medical Incident IC role to them for span of control.

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*I'd like to make the point that Night Group 4 ensured that all resources knew what medical resources we had on the Division and where they were located every operational shift. This greatly assisted during this medical incident.*

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#### **Due to Mediocre Visibility Conditions, Helicopters Turn Down Request for Air Evac**

Night Group 4 updated Communications of this medical incident occurring. Per initial patient assessment by the Assistant Supt., Communications requested to get air transportation in route in addition to the ground transport soon to be on scene.

REMS 6, equipped with UTV, was able to drive directly to the patient. Medic 16 (ambulance) was able to get within 300 feet of the patient on a known two-track road and park at a landing with room for maneuvering—that had been pre-identified. Response time was roughly 10 minutes for the REMS Team and Medic 16 to arrive on scene.

The patient was packaged in a TRS and loaded in Medic 16's ambulance with the initial intent to take our injured Squad Leader to DP 175 for medical air evac. Night Group 4 coordinated the identification and clearing of DP 175 for an LZ, while continuing to pass on medical incident updates to Communications.

Initially, the medical was a RED evac due to mechanism of injury and initial patient assessment. While the patient was in the ambulance, additional patient assessments showed that our Squad Leader was improving. This provided the option for ground transport to the Alta Vista Regional Hospital in Las Vegas, New Mexico, roughly 45 minutes away. With mediocre visibility conditions at DP 175, most helicopters turned down the request for air evac, with the exception of the Black Hawk. However, the delay to get the Black Hawk in the air to even attempt to land at the LZ would have been a major delay.

Based on the information at hand and the patient stabilizing, the decision was made to continue with ground transport. The crew and Assistant Supt. disengaged from the line and regrouped at DP 175 while I followed the patient to the hospital.

In conclusion, while the mechanism of injury was very severe, the Squad Leader is extremely fortunate that the injuries resulting from this accident were not worse. On May 31—16 days after his tree strike incident—I'm happy to report that our Squad Boss was doing much better and was cleared back to full duty. I appreciate everyone reaching out in support and the kind words we received.

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## Lessons Learned and Friendly Reminders

*We thought it would be beneficial to share some lessons learned and friendly reminders for folks to think about as we all transition farther into what will most likely be a busy 2022 fire season.*

### Depth Perception

Depth perception at night is worsened on a fire due to the amount of particulate in the air, which is compounded during heavy equipment night operations due to ground disturbance and the lights from the heavy equipment. This not only makes general visibility more difficult, but greatly impacts an individual's perception of distance and height. This pertains to both the HEQB and the Heavy Equipment Operator. A larger margin for error must therefore be provided between ground resources and heavy equipment.

- ❖ Some form of light or strobe that can act as a constant identifier 360 degrees or at least multi-directional (front and back)—regardless of what direction a HEQB is facing—would be ideal during nighttime heavy equipment operations. In this way, the operator can always know the HEQB's location if in close proximity. This would help instigate any tactical pause and additional communication that may need to occur regarding operational safety. Our crew will be purchasing and trial-running some form of additional lights to meet this need and it will become our crew SOP that HEQB use them during nighttime dozer operations.

### Working with Heavy Equipment in Timber at Night

Working in conjunction with heavy equipment to perform fire suppression activities as a HEQB poses its own additional hazards, especially when working in timber at night. While constructing fireline in timber, the HEQB must give a larger separation to manage those additional hazards. Just as in normal chainsaw felling operations, at least a 2½ tree length separation (consider more during night and poor visibility) should be maintained while heavy equipment is in operation. If the need arises to enter that space, radio communication should be utilized to halt operations and positive confirmation should be attained that it is safe—before HEQB enters that space.

### Night Shifts and Fatigue

Additional fatigue is a common hinderance that night resources face for multiple reasons:

- ❖ A transition period, different for each individual, is required for the body and mind to become used to working during the hours they normally sleep. Even more importantly is recovering properly through good, beneficial sleep when they would normally be awake and engaged in daily activities.
- ❖ On the Calf Canyon Fire, long night shift operational hours did result in barely meeting 2:1 and, in some cases, exceeded 2:1. On this fire there was also a need for night shift to be out early to the line to debrief with day shift resources on strategy, tactics, areas of concern—and to take advantage of the limited daylight available to get their bearings straight.
- ❖ Night shifts where fire activity remains high can result in night resources needing to remain engaged until day resources arrive for another debrief of events. While not a huge deal, if you only have to drive a few miles down the road to get food and sleep, logistically, night resources are more difficult as they need some form of lodging to sleep and recover properly during the heat of the day. Whether it's sleepers or an actual room, additional travel times can result in forcing resources to exceed 2:1. Fatigue accumulated for multiple consecutive days or weeks can have a negative effect on an individual's decision-making process and increases the margin for error.

### Friendly Safety Reminders

Over-communication regarding safety is not a bad thing. We often fail to bring up simple safety concerns to our more experienced coworkers because they've done it a thousand times before—so they must be thinking of the same safety concerns we are at the same time. If you're thinking of it—then bring it up. We all need concise friendly reminders regarding our safety to make sure we always have our bases covered.

### Nighttime Smoke Can Eliminate Medical Air Evac

It is very important that we realize that just a little smoke settling in valleys and canyons during nighttime inversions can eliminate the ability for a medical air evac at night as smoke inhibits the use of night vision. This needs to be planned for and discussed ahead of time during nighttime operations. The topic was brought up with the Night Group prior to this tree strike incident. However, clearly communicating over the radio when the option of air medical evac has been lost may present another opportunity for a tactical pause to reevaluate ongoing operations in conjunction with medical plans.

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