



## 2024 Incident Review Summary



**“Errors are a key component of effective learning.”**

**Robert Bjork**

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## **Introduction**

The information in this report comes from wildland fire incidents—from various entities—submitted to and gathered by the Wildland Fire Lessons Learned Center (LLC) in 2024. The primary source of this data is incident reports (Rapid Lesson Sharing, Facilitated Learning Analyses, Serious Accident Investigations, etc.). Most of these reports have been posted to the LLC’s [Incident Reviews Database](#). SAFENETs and other data sources have been included when no full report was produced or could not be located.

In 2024 we collected information on over 196 operational incidents.

We have examined these incident reports and learning documents, compiled a few numbers and extracted specific lessons. It is our aim to present this information in a way that empowers us all to improve future operations. We hope you turn these lessons into learning.

### **Exercises**

**This icon identifies specific discussion prompts related to the material.**



In 2024, the Wildland Fire Lessons Learned Center recorded **11** wildland fire-related fatalities, **two less** than 2023.



### Exercise:

Use the following prompts for discussion:

- What do YOU think of when you hear of a “Medical” fatality?
- What preparations have you made for yourself related to the possibility of a Line of Duty Death?

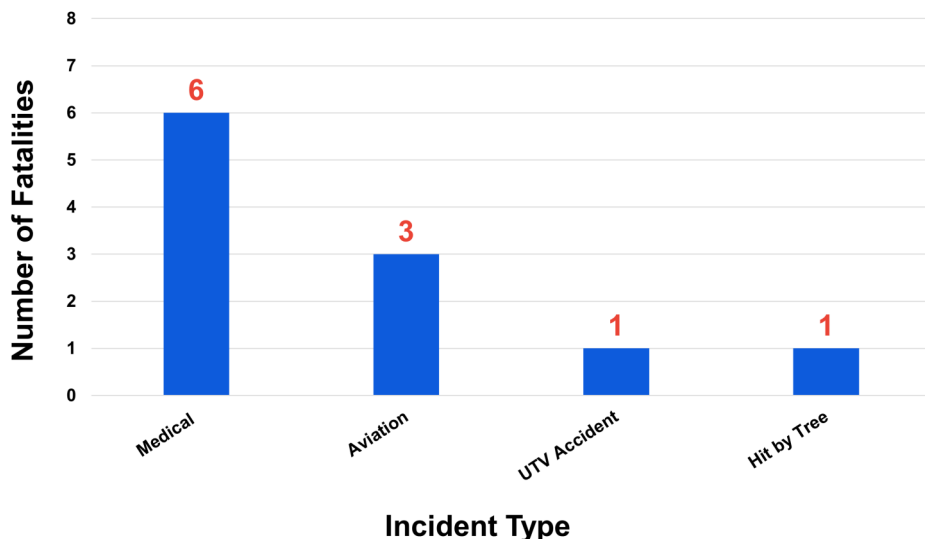


# Fatalities

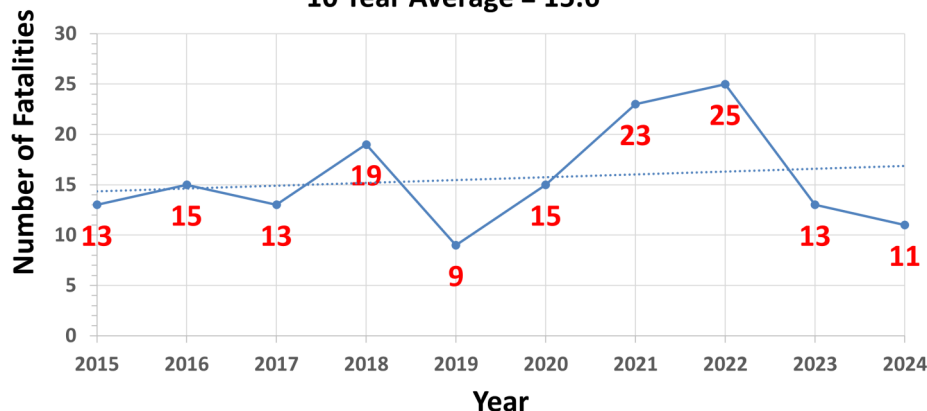
# 11

- 6 Medical
- 3 Aviation
- 1 Driving
- 1 Hit by Tree

2024 Wildland Fire Fatalities by Incident Type



Number of Wildland Firefighter Fatalities by Year  
10 Year Average = 15.6



Only one of the past ten years has a lower number of fatalities than 2024.



# ≡ Hit by Tree Incidents

In 2024, tree strikes occurred in **16 different** states during: training, all hazard response, prescribed fire, project work, and fire suppression activities. Remember that tree strikes happen in a variety of locations and conditions.



## Exercise:

Use the following prompts for discussion:

- Based on the type of work you typically perform, when are YOU at most risk of being hit by a tree?
- Is your crew prepared to handle these injury types?



## 24 Hit by Tree Incidents

- 10 During Tree Felling Ops
- 14 Non-Tree Felling Ops

Of the **10** tree felling operations resulting in tree strikes:

- In **5** instances the sawyer was hit.
- In **3** instances someone other than the sawyer was hit.
- In **2** instances a vehicle was hit.

Of the **14** non-tree felling incidents:

- **9** occurred during fire suppression work.
- **3** occurred during prescribed fire work.
- **1** occurred during hurricane response work.
- **1** occurred during project work.

Of the **24** Tree Strike incidents, **21 involved serious injuries**.

The 3 non-injury events were vehicle strikes.

The types of injuries include all of the following:

**broken teeth, concussion, fractured ankle, fractured facial bones, fractured hip, fractured skulls, fractured vertebrae, and loss of consciousness.**

There was one Hit by Tree fatality in 2024.  
The fatality occurred in New York on November 9th.

[Sterling Forest State Park Hit by Tree Fatality](#)

# ≡ Driving Related Incidents

As we think about vehicle related events: it's easy to focus on the responsibilities of the vehicle's driver.

Remember: passengers also have crucial responsibilities during vehicle operations.



## Exercise:

Use the following prompts for discussion:

- What specific actions can a passenger take related to safer vehicle operations?
- What are some insights ONLY a passenger can provide in a driving scenario?



We recorded 16 separate driving related incidents in 2024.

## Incident Types

- 9 Rollovers
- 4 Crashes
- 3 Broken Wheel Studs

Types of vehicles involved: engines, crew carriers, UTVs, pick-ups, a water tender, a sewage truck and a heavy equipment transport.



There was one driving related fatality in 2024 (UTV Rollover).

The fatality occurred in Connecticut on October 11th.

[Hawthorne Fire UTV Accident Fatality 2024](#)



## UTV Ops

In 2024, 4 of the driving related incidents occurred during UTV operations:

**3** rollovers and **1** crash.

Lessons continue to reiterate the importance of wearing seatbelts and helmets. The use of seatbelts and helmets remains inconsistent.



## Wheel Studs

In 2024 we recorded **3** incidents of broken wheel studs. This is a recurring issue involving a variety of makes and models. A summary of the events and the primary lessons are recorded in this [Data Points](#) publication.



# Heavy Equipment

We work around heavy equipment on a regular basis. Contingency planning around heavy equipment mishaps can be easily overlooked or oversimplified. Remember to think and ask heavy equipment specific “what if’s.”



## Exercise:

Use the following prompts for discussion:

- What assumptions do you have about heavy equipment capabilities and operations?
- When you see heavy equipment operating in “sketchy” conditions - what, if anything, can you do?



## 8 Separate Heavy Equipment Incidents in 2024.



## What Happened?

- 4 Rollovers (3 Bulldozers, 1 Compactor)
- 2 Equipment Fires (1 Drum Mulcher, 1 Skid Steer)
- 1 Fire Ignition (Masticator ignited a wildfire)
- 1 Close Call (Dozer pushed a tree and nearly struck handcrew)

### Rocky Ground

All of the heavy equipment rollover incidents from 2024 involved encounters with rocks and rocky ground. It is important for all firefighters to know the specific hazard that rocky ground presents for equipment. This hazard is compounded by slope.

Speak up and plan accordingly when you see the combination of heavy equipment and rocky ground.

### Bridge Creek Fire Dozer Rollover

“When you are weighing the potential risk/risk trade-offs, will you also put in the extra work to come up with an extraction plan?”

### Borel Fire Dozer Rollover

“As we continue to refine our emergency response capabilities on wildfire incidents, we should consider the need for different equipment based on the work being performed. For example, having forcible entry tools for extrication efforts when vehicles or heavy equipment are at risk of rollover (narrow roads in steep terrain).”

# ≡ Entrapments

In 2024, 4 of the 14 entrapments (29%) occurred during prescribed fire operations.



## Exercise:

Use the following prompts for discussion:

- What elements of prescribed fire make us vulnerable to entrapment?
- Think about your mindset during Initial Attack vs Prescribed Fire. Are there adjustments that could help manage the risk of entrapment?



“If you find yourself in a burning vehicle, consider partially deploying the fire shelter inside the cab and using it as a heat shield during escape. A stigma exists about only deploying fire shelters for last resort survival, but they are PPE that can be used however necessary to minimize or prevent injury.”

[Pony Lake Fire Entrapment](#)

In 2024 the LLC recorded 14 separate entrapment events—two more than 2023. There was more diversity in the type of resources involved in entrapment situations in 2024.

Initial Attack continues to be the most common stage of fire for entrapments. The break down of entrapments by fire type in 2024:

- 7 during Initial Attack
  - 3 Engine crews, 2 Individuals on foot, 1 Handcrew, 1 Dozer
- 4 during Prescribed Fire
  - 2 Individuals on foot, 2 ATV Operators
- 3 during Extended Attack
  - 2 Heavy Equipment, 1 Handcrew

### [Buffalo Pasture Prescribed Fire](#)

The ATV was on its side and the operator was struggling to get it upright. The wind switched, causing the ATV Operator to be impacted by 6-8 foot flames.

### [South Beaver Prescribed Fire](#)

To be prepared, the two scouting firefighters pulled their fire shelters from their line gear.





## Lessons from the Learners

This section includes lessons from those who were directly involved in the incident.



### [Sheep Fire Hit by Log Incident](#)

A firefighter was hit by a rolling log resulting in a skull fracture, a concussion, soft tissue injuries, and a sprained knee. A soft stretcher was used to carry them down the slope, across the river, and up to a pickup truck on the road.

#### **Lesson: Every Crew Should Have a Soft Stretcher**

Soft stretchers, like the MegaMover, have been utilized in other accidents and been identified as an excellent option for transporting injured people. They can fold up to the size of a space blanket to fit in line gear. They are also easily stored in vehicles or with trauma kits.



### [Compartment 22 Prescribed Fire Entrapment](#)

A firefighter was mitigating a snag inside the prescribed fire unit when fire behavior increased. As the firefighter quickly moved back towards the line, they became caught up in vegetation and impacted by fire.

#### **Lesson: Get Double Elbow Shirt**

The firefighter suffered burns to the elbows, which are recorded regularly in wildland fire situations similar to this one. Newer flame-resistant shirts are intentionally designed with double elbows to reduce injuries in this type of situation. Get flame-resistant shirts with double elbows.



### [Mark Twain National Forest UTV Fire](#)

The employee was operating the UTV with a bed-mounted debris blower. It is assumed that heat from the blower exhaust ignited a nylon covered elastic bungee cord that was securing a 5-gallon "safety can" of gasoline. The burning cord ignited the fuel can while in the bed of the UTV.

#### **Lesson: Check for Combustible Material Near Exhaust**

Do not transport additional items in the bed of the UTV while mounted equipment is in use. If additional items must be transported, ensure that an appropriate buffer will prevent contact of combustible materials with heat sources. Ensure you have a serviceable fire extinguisher on UTVs.



## ≡ Lessons from the Learners

This section includes lessons from those who were directly involved in the incident.



### [Snag Fire Sawyer Burn Injury](#)

A sawyer suffered burns when the chainsaw he was operating ignited. He had just refueled. It appears the quarter-turn “toolless” fuel cap was not fully aligned, seated, and sealed when he flipped the saw to carry it over his shoulder. Fuel poured out of the tank and was ignited by open flame.

#### **Lesson: Check for Leaks After Closing the Cap**

This is not the first lesson on quarter-turn or toolless fuel caps. We’ve focused so much on opening the caps in a way that prevents fuel geysers, that it may be time for a reminder on closing these caps. After closing the cap, tilt the saw up, and do a visual inspection for leaks.



### [Falls Fire Chainsaw Cut](#)

A firefighter used a chainsaw to open the road for the engine, deciding to do this brief task without wearing chainsaw chaps. Once at the structure, saw operations continued without chaps. The sawyer experienced chain-saw kickback resulting in a saw strike on the leg above the knee. The firefighter was taken to the hospital and received 78 stitches.

#### **Lesson: Take the Time to Put On Chaps**

“I had the firefighter grab the chainsaw to cut a couple branches. Due to the limited amount of work, the decision was made to not wear chaps. This incident is a huge eye-opener for me. It doesn’t matter how small the job may feel, always take the time to put on your proper PPE—especially when operating a chainsaw.” — Engine Boss



### [Inyo Felling Incident Hit by Tree](#)

A sawyer from an Interagency Hotshot Crew sustained serious face and head injuries and was knocked unconscious by a large branch during a tree felling operation.

#### **Lesson: Wear Real Safety Glasses**

Wearing all the proper, quality PPE was crucial to minimizing the injuries the sawyer sustained. Critical pieces of PPE that contributed to protecting the injured employee from more catastrophic injuries or death were the hardhat and safety glasses. Had the employee been wearing standard sunglasses of his choice, which is commonly found in wildland fire operations, he may have sustained additional facial and orbital injuries.



# 20 Years of Heavy Equipment Related Incidents

When we look at numbers, it's important to consider how we can make the information useful. Very rarely do numbers tell us "Why?" Try using these numbers to inspire questions and new perspectives.



## Exercise:

Use the following prompts for discussion:

- What are the most effective uses of Heavy Equipment you have witnessed?
- What makes Heavy Equipment work dangerous?
- How can YOU improve risk management related to Heavy Equipment operations?



2024 involved a higher number of Heavy Equipment related incidents compared to recent years. This prompted us to look through the LLC Incident Review Database for events involving Heavy Equipment.

## In the Past 20 Years

Rollovers make up **58%** of all reported Heavy Equipment incidents.



## In the Past 20 Years

In the **eastern** half of the country, **50%** of all entrapments involved tractor plows



## Fatalities

In the past 20 years we have recorded

**9** Heavy Equipment related Fatalities:

- 4 Rollovers
- 3 Entrapments
- 2 Medical

"All operators, swampers, and HEQBs need to know how to get personnel out of a piece of equipment in case of an unplanned event. We go over crash rescue with aviation. This same discussion needs to occur with heavy equipment."— [South Fork Complex Heavy Equipment Rollover](#)