

# Poe Cabin Fire

## **Facilitated Learning Analysis**

In regards to burn injuries sustained on August 7, 2007

### **Brief Summary**

On Tuesday evening, August 7th, three Hotshots received burn injuries while participating in a burn out operation on the Poe Cabin Fire. Two crews were burning and holding along a ridgeline road and had just tied the burn-out into a ridge top meadow. Two lookouts were established and being used. The road was their pre-identified escape route with two safety zones; a series of meadows down the ridge and a large helispot up the ridge. Fire in the canopy across the road was a trigger point to stop burning and go to safety zones.

The following is from the La Grande Hotshots narrative of the events:

***“The next series of events all happened in less than two minutes.***

*The winds started to shift and there was a curl of smoke over the line and an ember wash into the green side of the line. La Grande Hotshots picked up one spot in the top of a dead snag. The wind subsided for a moment and the holders continued to hose down the green and to watch for spots. The wind then picked up again and pushed a pulse of heat through the crowns to the road. This pulse of heat crossed over the road through the crowns.*

*The last three holders, who were spread out watching for spot fires and running a nozzle, were cut off from the top meadow by this pulse of fire; and the call was made to pull out down to the lower meadow as spots were started from the pulse across the road. The three remaining crewmembers had to run a few hundred feet down the road through the heat to get to the lower meadow. All three sustained radiant heat burns to their necks and arms - the last one received 2nd and borderline 3rd degree burns to the face and arm, and fell and injured a knee during the escape. Their escape was aided by the holding boss and assistant superintendent.”*



## **Introduction**

What follows is a Facilitated Learning Analysis (FLA) detailing the events on August 7, 2007 in regards to the burn injuries sustained from the Poe Cabin Fire in Idaho's Hell's Canyon National Recreation Area. The details brought about in this report are meant to foster a learning environment for other firefighters across the nation in order to prevent further injuries and or death. The focus in this report is not to put blame on any parties involved; but rather to use this event to aid in earlier recognition of developing situations; allowing fire fighters to make decisions that will prevent near misses, accidents and injuries.

It is hoped that firefighters will use the 'Event Summary' narrative, 'Lessons Learned' and 'Discussion Points' (either stand alone or together as time allows) during safety briefings and training sessions. A sand table can be used to help tell the story. Realizing that every fire incident is unique, the focus of the Facilitated Learning Analysis is not the Poe Cabin fire, or the last fire you fought, but the next fire you're about to fight.

Note: No names will be submitted in this report. Again, the objective is to provide take-home lessons to the wildland firefighter community with the focus on the next fire we fight.

## **Conditions/ Environment**

Objective: A Type 2 team transitioned in on August 4, 2007, three days prior to the event. With three days of road preparation for the burnout operations, the plan was to connect the black east of the Cabin to the 1819 road, with the burnout to follow the road and Dutch Oven Ridge.

Fuels: The burn out was to be conducted along a road system and on a ridge top in dead sub-alpine fir and dead spruce. This is an "all or nothing" fuel type - there was very little ground fuel - green huckleberry, heavily grazed grass, and some dead and down. The crowns were mostly dead and moss covered the trees from bottom to top. Fire behavior in this fuel type typically either skunks around leaving a real dirty spotty burn, or develops into a crown fire with convection and consumes everything.

*Tuesday – August 7, 2007*

Weather Discussion: An upper level trough will pass over the fire later this afternoon. Partly cloudy skies along with reduced visibilities in smoke will prevail over the fire today. As the trough approaches the area ... thicker cloud cover will work in and the winds will turn west. A narrow swath of virga may indicate its passage ... and should be accompanied by a brief period of higher gusts ... most likely between 1800 and 2100.

Division E: (from IAP). A lot of heart remains from yesterday's activity. However in this division, a lot of mop up and line improvement continues, we are gaining on it. The spots across the 1819 Road got knocked down by the helicopter and look good. Also, in the history of this fire, the fire has laid down several times, only to show up a few days later. The possibility of gusting westerly winds behind the forecasted trough passage could affect

the fire behavior on Dutch Oven Ridge. Best estimated time of this system passage is between 1800 to 2000 hours.

Predicted Weather Readings:

Thunderstorms: none predicted  
Max Temps: Mid slopes/ridges (5000') 74-79  
Min Humidity: Mid slopes 18-23%, Ridges 20-25%  
Ridge top Winds: Light and variable early with gusts to 8mph in the afternoon. Late afternoon will see winds shift west with some gusts to 12 mph  
Haines index: 3 (low)

Actual Weather:

Skies were clear when the burn operation was initiated at around 1100. Cumulus started to develop around 1230. Several cells passed over the area throughout the day, and thunder was heard around 1600.

[Last weather reading at 1800, before the event]:

Temp: 67  
RH: 38%  
Winds: 0-3 variable  
Precip: slight

Personnel in the vicinity at the time of the event:

Division Trainee  
Safety Officer  
Task Force Leader Trainee – Crews – acting as Burn Boss  
Strike Team Leader – Engines  
Strike Team of Engines – Spread out along the top portion of line manning the pump.  
La Grande Interagency Hotshot Crew – conducting firing operations  
Clear-Nez Type 2 crew – helping La Grande with holding operations

Safety: (from IAP). Even though the fire is no longer ripping like it was just a few days ago. There is still danger present. I'd like to take this opportunity to remind you of the:

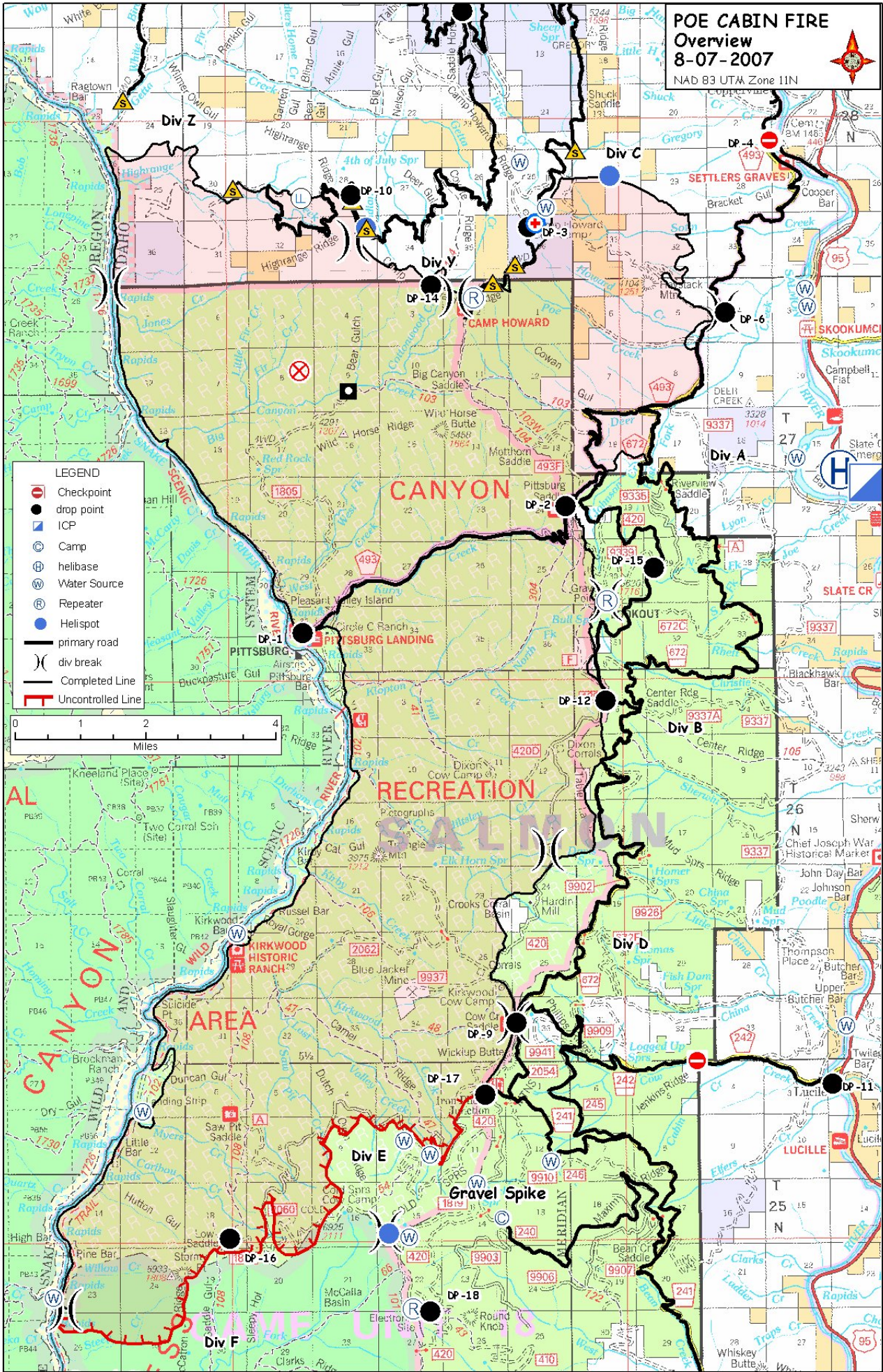
Common Denominators of Fire Behavior on Tragedy Fires

- Number 1: On relatively small fires or deceptively quiet areas of large fires.
- Number 3: When there is an unexpected shift in wind direction or in wind speed (expect Gusty and erratic winds around virga showers and dry lightning. Keep vigilant towards the sky)
- Number 4: When fire responds to topographic conditions and runs uphill.

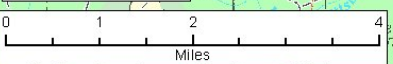
Location of the Fire/Burnout Operations

The fire was on the Idaho side of Hell's Canyon National Recreation Area, about 6 miles southwest of White Bird, Idaho. Burnout operations were on the southeast flank of the fire, (Division E) along the lee side of Dutch Oven Ridge and the 1819 road. They started just NW of Cold Springs Helispot and moved NE along the 1819 road and plumbed hand line. *Please refer to the maps on the following pages.*

**POE CABIN FIRE  
Overview  
8-07-2007**  
NAD 83 UTM Zone 11N



- LEGEND**
- ⊖ Checkpoint
  - drop point
  - ▣ ICP
  - ⊙ Camp
  - ⊕ helibase
  - ⊕ Water Source
  - ⊕ Repeater
  - ⊕ Helispot
  - primary road
  - ( ) div break
  - Completed Line
  - Uncontrolled Line





## **Event Summary** – Poe Cabin Fire: Burn Injuries - August 2007

### **(In the words of the La Grande IHC)**

The La Grande IHC had spent three days prepping for burnout operations along the single lane road leading up to Cold Springs Helispot. At 1000 the morning of August 7th snagging and road preparation were considered complete, a hose lay was put in by the strike team of engines the previous day and the crew had several contingency lines to bump back to if necessary. A small test fire was started in an isolated patch of trees adjacent to the main fire. It burned actively and generated spot fires. The main fire also began to increase in activity and develop spot fires in front of itself. All options were considered, and the plan to burn-out to the meadow was chosen. This plan would hopefully give another secure anchor point ahead of the main fire and would prevent a severe run at the main ridge if wind shifts occurred. Around 1300 a crewmember off the Hotshot crew began pre-treating the green with helicopters, and one squad lit off back towards a structure while another nursed the burn-out operation ahead of the main fire and the spots. At about 45 minutes after the burn-out operation started, thunder cells formed in the area and the fire had a steady 15-18 mph SW wind. The La Grande Hotshots would provide the ignition specialist and holding boss; along with the lighters and a portion of the holding team. The rest of the holders would be off the Clear Nez Type 2 crew and would be manning laterals behind the crew, pre-treating the green side of the road to help reduce the chance of spot fires.

The burn had gone well and the crews were committed to the operation, burning to keep ahead of the main fire. The general winds and the draft from interior burning and from the main fire were pulling the heat off the line. The fire behavior was heavy multi-tree torching, with spot fires starting 1000 to 2500 feet ahead of the main fire. The column capped a couple of times, but never really developed a strong convective lift. There were several active cells that passed over the area throughout the day, but there were no adverse winds from these cells. Winds from these cells blew the burn-out operation back towards the main fire.

LCES had been established and re-evaluated throughout the day as changes occurred. The crew had two to three lookouts established at different points throughout the day and two pre-identified escape routes and safety zones. Communications were established with adjoining forces and proper briefings given.

At about 1800, the burn-out had tied into a ridge top meadow, which had also been identified as one of the two safety zones. Firing was complete, and about half of the La Grande crew were in the meadow. Also around this time a small amount of precipitation was felt by a few crewmembers.

### ***The next series of events all happened in less than two minutes.***

The winds started to shift and there was a curl of smoke over the line and an ember wash into the green side of the line. La Grande Hotshots picked up one spot in the top of a dead snag. The wind subsided for a moment and the holders continued to hose down the green and to watch for spots. The wind then picked up again and pushed a pulse of heat through the crowns to the road. This pulse of heat crossed over the road through the crowns.

The last three holders were spread out watching for spot fires and running a nozzle. They were cut off from the top meadow by this pulse of fire; and the call was made to pull out down to the lower meadow as fire started to cross the road. The three remaining crewmembers had to run a few hundred feet down the road through the heat to get to the lower meadow. All three sustained radiant heat burns to their necks and arms - the last one received 2nd and borderline 3rd degree burns to the face and arm, and fell and injured a knee during the escape. Their escape was aided by the holding boss and assistant superintendent.

A final head count was done immediately after the last of the holders made it to the meadow and the crew EMT's started on wound care without delay and the line medics (which included a paramedic) were on scene within minutes. The injured crewmembers were treated and transported by vehicle to a helispot, and were flown to the ICP helibase, where they were life-flighted to Saint Alphonsus Regional Medical Center in Boise, Idaho. They were met at Boise by people from their home district, and from the Boise NF. All three were treated and released, and spent the night in a motel. The folks that met them took care of items for them, and drove them home the next day.

Meanwhile, the La Grande Hotshot crew got off the mountain at about 0030, spent the night in a motel, and demobed in the morning to return home.

## **Lessons Learned** – Poe Cabin Fire: Burn Injuries - August 2007

(In the words of the La Grande IHC)

- **Fuel Type – Sub-alpine fir/ spruce** - is a very volatile fuel type. It usually has relatively slower rates of spread, but the heat produced is extreme. Attempts to hold line or burn in this fuel type needs to be carefully assessed and other, safer options should be seriously considered. To be successful in sub-alpine fir requires a favorable wind and lots of preparation removing fuels from the line. Still, a 4 blade-wide line and a hundred foot of canopy opening does not work in a fuel type that doesn't burn on the ground and that spreads through the crowns and spots from a hundred yards to a mile ahead of itself. Again – it has to be a favorable wind and good weather information and observations are critical.
- **Distractions and Situational Awareness** - Many suppression operations are very complex, and the leaders of these operations cannot loose situational awareness. Do not allow distractions to compromise situational awareness. Distractions need to be minimized, briefings should not be interrupted, and instructions should only be given through the proper chain of command. The “sterile cockpit” concept is required for aircraft take-offs and landings, as aircraft accidents have been attributed to distractions during these complex operations. We need to maintain a similar level of attention during critical or complex operations.
- **Resource objectives vs. firefighter safety** - needs to be carefully assessed. We need to decide right away if we are going to fight fire aggressively and to use all available tactics, or if we are going to minimize resource damage, and accept what fires are going to do. If we make this decision, we need to minimize risk to firefighters. In this fuel type, the decision needs to be made very quickly; do we have full use of iron, (all equipment) or are we going to accept a season-ending event.
- **Experiences of all those around us** - We are in a new realm with experience and trainees. We need to carefully assess our own experience, the experience of our people and key people in our operations, the experience of our adjacent resources, and the experience of the overhead we are working for.
- **PPE** - it works. The three crewmembers that were burned were wearing Nomex that was in good condition, sleeves were rolled down, gloves were on, glasses were on, but still burns were received. We cannot stress enough the importance of PPE – if sleeves would have been rolled up, or if they did not have gloves or glasses on, these could have been very serious – life changing burns. Also – no poly or synthetics – the crewmembers were

burned by radiant heat through their nomex. We all wear fire resistant clothing for a reason, make sure it is worn correctly and is in good condition.

- **Shrouds** - would have reduced some of the injuries. We do not require shrouds – it's an option. Shrouds are hot and cumbersome while working. They reduce cooling and increase heat. In this case, a shroud would have provided more protection and possibly prevented some injuries because it provides much more protection from radiant heat. Everyone on the crew has now been issued shrouds.
- **Feelings** - Several of us had “our finger on the trigger” to disengage, and were in the process of making the decision to pull everyone out when the fire came back at us. But, we made the decision a minute too late instead of a minute too early. If you have any doubt about a situation, pull out and reassess – you can always go back in if / when things get better. Sixty seconds earlier, and nothing would have happened except that we would have “lost” another one – sixty seconds later and it would not have been survivable.
- **Protocols for burn victims** - it is not clear; OWCP is not burn-victim friendly. Please refer to the Wildland Firefighter Foundation homepage for more information on what we need to do, but any burn victim should immediately go to a burn center. We need to fix this. The crewmember who received 2nd and borderline 3rd degree burns was seen in Harborview Burn Center almost three days after the event. Burns are time critical for both short and long-term care. The hang-up occurred when the crewmember was released from Boise Emergency Room; from there, because they had been released, had to get another referral from their primary care provider (not from an ER physician) that stated again that they needed to go to the burn center. The emergency room doctor had already stated the person needed to see a burn unit and the trained professionals in the burn unit are the only people that should be making decisions about the kind of burns firefighters sustain on the line. Furthermore if 2nd degree burns are sustained; airways can most definitely be compromised.

## **Discussion Points** – Poe Cabin Fire: Burn Injuries - August 2007

### **(From the Facilitated Learning Analysis Team)**

Most of the following points were brought forward by either the firefighters or the line overhead and led to engaging discussions. The FLA Team brought up a few points of their own and developed the actual discussion points below. Although these discussion points initiated from the Poe Cabin event, the objective is not to second guess those actions or decisions, but rather to reflect on them enough to advance discussion to the next fire you will be fighting.

### **Pre-fire planning**

The area in the vicinity of the Poe Cabin Fire, particularly the lower slopes, burns every 2-3 years. There are fires somewhere in the Hell's Canyon NRA seemingly annually. In order to provide for better firefighter safety, Discuss:

- Should areas which experience major burn events on a regular basis have additional pre-fire planning?
- Should/could all resource concerns be pre-identified and mitigation measures agreed-to?
- Should/could firefighting tactics and limitations be addressed and issues resolved, prior to fire season?
- Should firefighters who commonly fight fire in those areas be consulted as to the issues they face when working in the vicinity?

### **Supervision**

The IHC was providing a lookout, the ignition specialist, the holding boss and some lighters. This left a higher percentage of less experienced firefighters on the holding team. For the three at the end of the line, it was their first year on the IHC. One of the three had a radio. Discuss:

- What is a supervisor's primary responsibility?
- How can supervisors be aware of how well information is being exchanged, as well as the comfort level, of firefighters at the end of the line?
- Identify ways safety focus can be maintained when supervisors assume additional responsibilities or become 'Mission Oriented'.

## **Communication/Instructions**

As things began to escalate: radio traffic became heavy; not everyone on the crew had a radio; it got extremely loud with trees torching and popping; it was extremely difficult to hear other crew members; there was reduced visibility from smoke; crew spacing got out to 75'; three firefighters (first year on La Grande IHC) were at the end of the line. At one point the burn boss from the overhead team shouted "grid the green"; it is questionable who heard the order but it did not come through the proper chain of command and no firefighters on the IHC were in the green.

### **Discuss:**

- How the flow of communications can be maintained to each and every firefighter? What steps are taken to insure that everyone receives and understands the communication?
- The benefits or feasibility of having experienced firefighters within talking distance of crewmembers new to the crew during high intensity operations.
- How a crewmember should respond when emergency instructions, good or bad come from outside their chain of command?
- Who can give the orders to retreat when there are multiple layers of command on the Division? Does there need to be a common understanding on how the order to retreat will be given?

## **PPE**

Injuries resulted in spite of proper use of PPE (and a Safety Officer continually checking for compliance). These injuries could have been much worse if PPE was not in place. Discuss:

- Who is responsible for correct use of PPE?
- If all firefighters are correctly using PPE, what else can a Safety Officer focus on that may prevent injuries? How can the effectiveness of the Safety Officer be amplified?
- The IHC talked about issuing shrouds to the crew for future use. Some contend that shrouds hold body heat in, creating additional issues. National discussion regarding shrouds focuses on not having firefighters engaged when a shroud is necessary. What do you think?

## **LCES**

For this burnout operation, LCES had clearly been established and re-evaluated throughout the day with radio communication, at least two lookouts and multiple escape routes; one uphill and one downhill to different safety zones. Discuss:

- The merits of running ‘What If’ scenarios that might include quickly escalating fire behavior and how that might affect or compromise LCES. In other words, are we designing LCES to work even if the plan doesn’t work?
- The need or feasibility of having a secondary escape route if we are bringing fire up to a control line which is part of the escape route.
- How a fire’s potential to encroach upon an escape route affects the trigger point?

### **Trigger Points**

When talking to accident victims, often a common thread is that “*it happened so fast...*” usually followed by “*we didn’t have time to ‘react’, or ‘escape’, or ‘avoid it’, or ‘change plans’, or ‘communicate’*” and so forth. [The obvious explanation is that if it happened or developed slowly, one would have time to react and there wouldn’t be an accident.]

The ‘Event Summary’ mentions non-predicted thunder cells forming, multi-tree torching, ember wash into the green, a spot fire in a snag, small amounts of precipitation, the wind subsiding then changing... Discuss:

- What the trigger point was in this case –any fire across the line? spot fire? established fire? fire in the canopy? Did everybody have the same understanding? Does your crew, division, team, etc. develop/identify trigger points? If so, how do you communicate them and ensure understanding?
- Were there indicators that would have triggered an escape 1 minute earlier, 2 minutes earlier, or 5 minutes earlier, instead of having firefighters surprised in the moment?
- When we look at cues from our individual perspective or position on the fire line, often none of them seem alarming. Yet when you look at all the cues collectively (acknowledging it’s easier in hindsight) an earlier warning is often there.

### **Situational Awareness**

Many operations in wildfire suppression are very complex with many moving pieces. It is often difficult to track everything that is happening. Discuss:

- What are some events that may have occurred that could have reduced situational awareness during this event?
- What can be done to help maintain – increase situational awareness during a complex operation? Who is responsible? How is critical information shared?
- What is the “Sterile Cockpit” concept? How does it apply to wildfire?

## **Facilitated Learning Analysis Process**

A Facilitated Learning Analysis Team (FLA) was initiated in agreement by the Northern Region and Pacific Northwest Region of the USFS. The team was assigned to interview personnel central and peripheral to the burn injury incident. Focusing on learning rather than blaming, the team's mission was to identify experiences of those involved and help them identify decisions and actions that will prevent near-misses or accidents in the future. The team facilitated discussion and conducted a sand table exercise with the Interagency Hotshot Crew involved. The team also met with and participated in an After Action Review with the Incident Command Team.

Note: The ClearNez (type 2) crew was dispatched to another fire prior to the FLA team's arrival. Attempts to connect with them for interviews have been unsuccessful. Therefore, we are missing any additional perspective they might have been able to share.

## **FLA Team members**

Jeff Walter, Forest Supervisor, Ochoco N.F., Prineville, OR – Team Leader  
Jim Sullens, Safety and Occupational Health Specialist, Regional Office, Portland, OR  
Dennis Baldrige, IHC Superintendent, Cleveland N.F., San Diego, CA  
Paul Chamberlin, USFWS, AFD, Missoula, MT – FLA Process Coach