



# Lolo Peak Fire Tree-Strike Fatality

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*Learning Review Narrative*

**August 2017**



Forest Service

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# Lolo Peak Fire Tree-Strike Fatality

## Lolo National Forest, Montana – August 2, 2017

### Learning Review Narrative

#### The Fatality Event

##### Division Assignment and Activities

The Lolo Peak Fire was detected on July 15, 2017, at approximately 1430 (2:30 p.m.) in a unique section of the Selway-Bitterroot Wilderness.<sup>1</sup> The Bitterroot National Forest (Bitterroot NF) administers this section of the Wilderness for all resources except Fire Management, which is the responsibility of the Lolo National Forest (Lolo NF). Between July 15 and August 2, the Lolo Peak Fire grew to about 6,300 acres.

On August 2, the Vista Grande Interagency Hotshot Crew (Vista Grande IHC) was assigned to cut snags<sup>2</sup> along the north side of the road in the Carlton Ridge Research Natural Area (RNA). To complete its assignment, Vista Grande IHC broke into four groups, each of which was assigned a two-person saw team. Brent Witham, a Type 2 Faller and fourth year crewmember and Sawyer, was assigned to one of those groups.

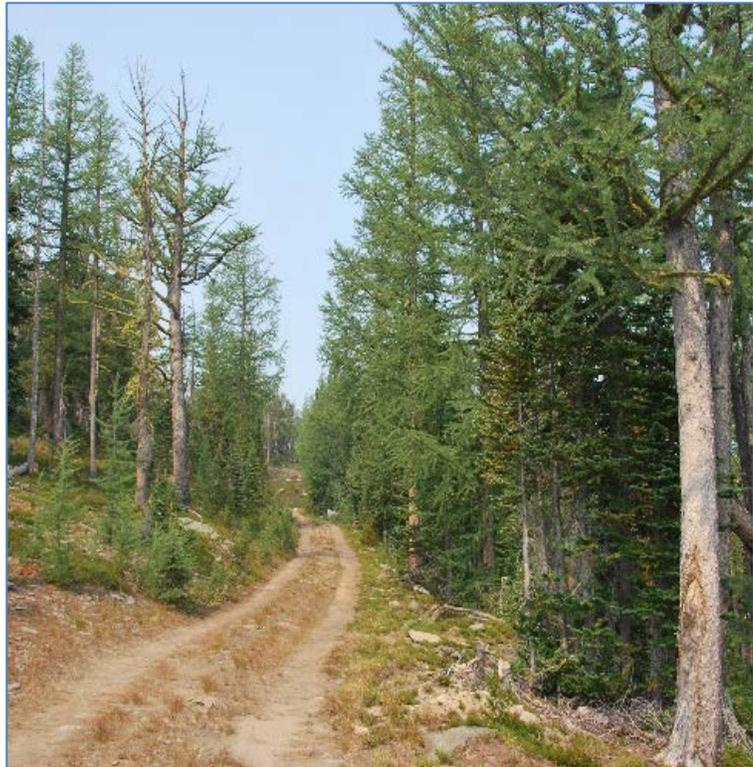


Figure 1: Photo taken along Carlton Ridge Road demonstrating the terrain and vegetation.

The assignment required falling<sup>3</sup> dead trees, also known as snags, which were located within 30 feet of Carlton Ridge Road, a ridgetop road that bisects a stand of subalpine larch (*Larix lyallii*) and whitebark pine (*Pinus albicaulis*). Slopes along the road within the RNA are gentle (see Figure 1).

Vista Grande IHC had been cutting trees all morning; their saw teams cutting tank for tank.<sup>4</sup> Brent, being the more experienced Sawyer on his saw team, started off first thing in the morning, cutting until he had run through a tank of fuel. His saw partner cut the next tank, and Brent took over to cut the third. Brent had felled only a couple of snags on the third tank of fuel before the group decided to take lunch.

<sup>1</sup> The Selway-Bitterroot Wilderness (1.3 million acres) is located in eastern Idaho and western Montana.

<sup>2</sup> Any standing dead tree or remaining standing portion thereof.

<sup>3</sup> To cut down trees (fall, fell, felling, falling).

<sup>4</sup> A strategy saw teams use to decrease fatigue and increase experience. One Sawyer will cut until the fuel tank on the saw is empty. Once empty, the other Swamper will take over as Sawyer. The two continue to switch at the end of each fuel cycle.





Figure 2: Photos showing the curved bole (left) and forked top (right) features of the cut tree.

After the lunch break, Brent started assessing the last snag within his saw team's cutting area that needed to be felled before they would have to leap frog past the next saw team. The tree was a standing dead whitebark pine approximately 15 inches in diameter at breast height (DBH) and 50 feet tall. The bole of the snag curved and forked several times, resulting in multiple tops (see Figure 2). Brent and his saw partner sized up the tree and

discussed how the lean was such that it would allow the tree to be felled in any direction.

They chose a direction that would place the snag into a natural opening and began to prepare their cutting area. Brent took off his pack and staged it near the road; he grabbed his five-pound felling axe and some wedges and laid them by the base of the snag. His saw partner scraped the bark off of the tree as high as he could reach with his rogue hoe to look for defects in the bole of the tree.

Brent was the only one at the base of the snag when he began cutting. His saw partner had moved out of the cutting area, and a few of his crewmates were watching from afar. Brent put in the face cut (i.e., the undercut and the pie cut), and the cuts lined up well on the first try. Brent then went to the back of the snag and bored out the center of the holding wood (see Figure 3). Removing the center of the holding wood is a practice that is used to create space for a wedge to be driven further into the tree, providing additional lift to make the tree fall. This technique is typically used when a wedge impacts the holding wood before it can provide enough lift to open the kerf.<sup>5</sup> Crew Sawyers had noticed this occurrence frequently that day and decided that the center-bore tactic was appropriate for their situation.

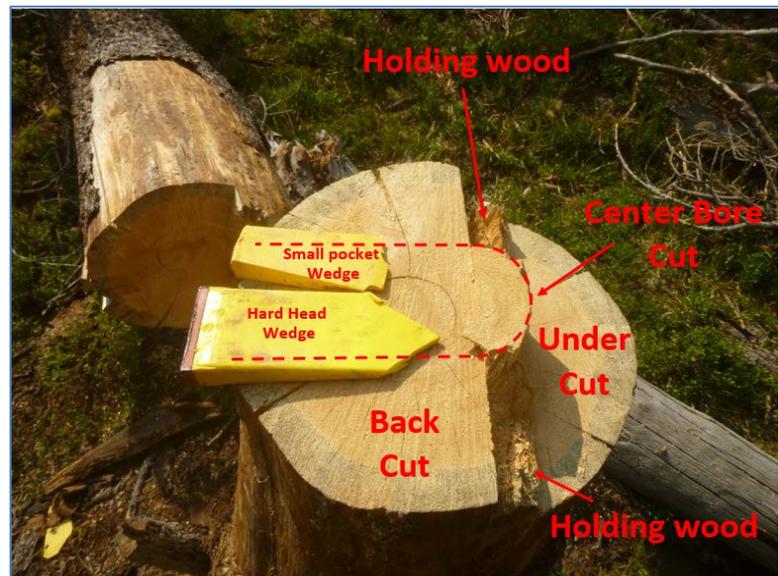


Figure 3: Photo of the stump showing the placement of the cuts.

<sup>5</sup> A slit in the tree made by cutting, especially with a chain saw.





Figure 4: Birds-eye view of the accident location showing the intended lay of the cut tree and its actual lay.

Brent then started his back cut. When satisfied with the depth of his back cut, Brent turned off his saw, set it down, and began pounding a small pocket wedge into the kerf. He sunk the wedge all the way into the back cut and then put a second, hard-head wedge into the kerf (see Figure 3). As Brent began pounding in the hard-head wedge, a loud pop was heard, and the snag began to fall approximately 100 degrees off of its intended lay (see Figure 4). Brent stayed at the stump for a moment, and his crewmates began yelling for him to run. Brent took off running uphill along his escape route. While Brent was escaping, he was struck from behind by the falling snag, fatally injuring him.



Figure 5: Firefighter Brent Witham was fatally injured when a tree he was felling hit him.



## Recent Events: Setting the Stage

### Pre-Season Planning

Just a year prior to the Lolo Peak Fire, Justin Beebe, a member of the Lolo Interagency Hotshot Crew (Lolo IHC), died August 13, 2016, on the Strawberry Fire in Great Basin National Park, Nevada, when he was struck by the tree he was cutting (see inset at right).<sup>6</sup> The Lolo NF spent the entire winter making adjustments to their culture to incorporate the lessons learned from that tragedy. One of the key messages the Forest put forth was to not engage an assignment until a plan was in place for how to get [injured] firefighters out in a timely manner. Pre-season crew briefings and discussions revolved around the events of Justin Beebe's death, and these discussions influenced the strategy on the Lolo Peak Fire.

### Strawberry Fire Fatality



Justin Randal Beebe, a member of Lolo IHC, lost his life while cutting a hazard tree during suppression efforts on the Strawberry Fire, in Great Basin National Park, Nevada on August 13, 2016. He was a man of great character and humbleness. We remember Justin for his quiet and generous nature, a kind and thoughtful manner, an always-positive attitude and friendly smile, and that tireless work ethic.

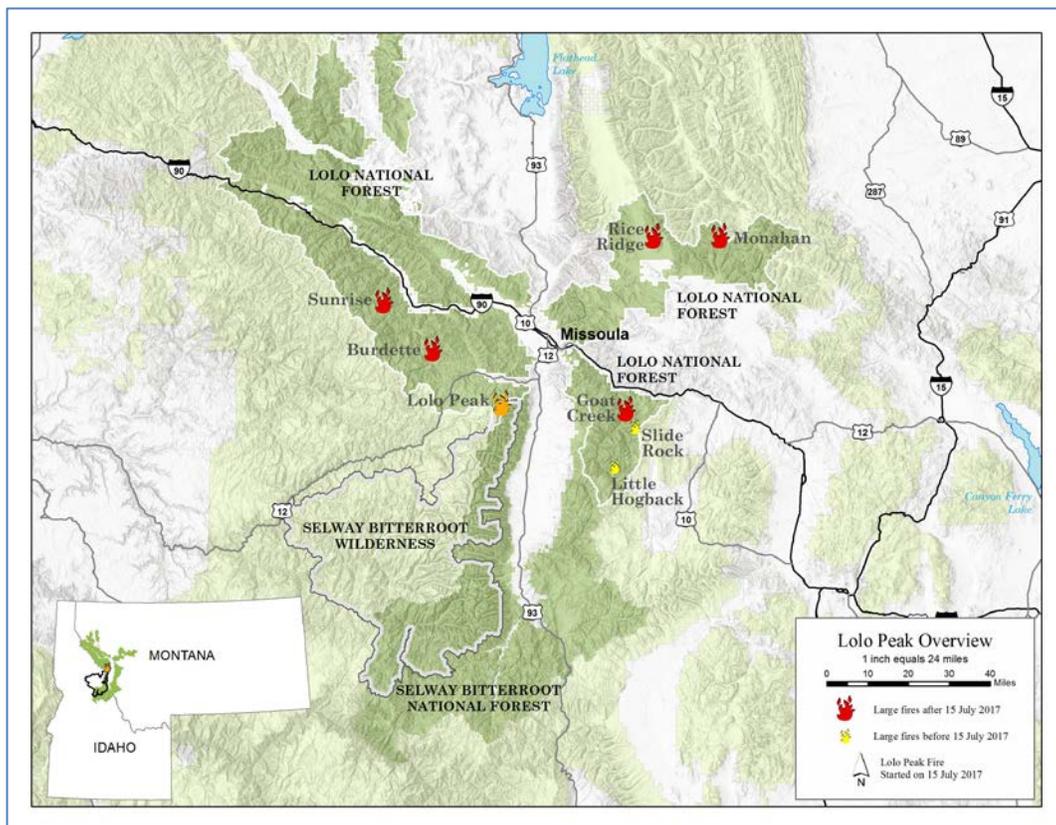


Figure 6: Map of fire activity on the Lolo and Bitterroot national forests from May to July 2017.

<sup>6</sup> The Strawberry Fire Fatality Learning Review Report can be found on the Wildland Fire Lessons Learned Web site at <https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=a50ca4eb-43e5-7fe3-feb3-52abecbb4606&forceDialog=0>.



## Fire Activity on the Lolo National Forest

On the day the Lolo Peak Fire was detected, numerous other emerging fires that had been sparked by recent lightning were burning on the Lolo NF as well as several large fires (see Figure 6). Two Incident Management Teams (IMTs) were already managing fire complexes in the local area. The amount of large fire activity occurring was abnormal for the area at that time of year and was indicative of the fuel and weather conditions on the Forest. The fuel moistures and fire behavior being observed on the Lolo NF in July are not typically seen there until September, if at all, in an average fire season.

### Another Tree Strike

On July 19, 2017, a local firefighter was killed while assigned to the Florence Fire, a small fire burning on the Lolo NF (see inset at right). Trenton Johnson, age 19, died when he was struck by the broken-off top of a burning tree.<sup>7</sup> The loss, a fresh and all-too-close reminder of the risk involved in wildland firefighting, further influenced how the Lolo NF was managing fire.

### Span of Control

The amount of large fire activity in the area was spreading the span of control on the Forest thin. Public interest was high, and the Forest Supervisor felt the need to ramp up administrative capacity on the Forest. To remedy this, the Lolo NF Forest Supervisor, who was the only qualified Advanced Agency Administrator,<sup>8</sup> requested the help of some out-of-Region Agency Administrators (AAs) who had formed strong working relationships with the Forest Supervisor in the past.

Upon arrival, the off-Forest AAs, also known as Acting AAs,<sup>9</sup> were asked to fill in the gaps on the fires that the Forest Supervisor was unable to cover. The Acting AAs were not delegated to specific fire(s), resulting in multiple AAs working on multiple fires. The Forest Fire Management staff noted that this situation caused some confusion, which was spurred by the number of different Acting AAs and a lack of clarity in their roles. Despite the confusion, they still felt as though they had a good Forest Supervisor–Fire staff relationship and were supported by leadership.

#### *Post-Incident Reflection*

*“The 19 fires we had going, we were used to that. It was the resistance to control that we weren’t used to.”*



### Direct versus Indirect Strategy

The Lolo Peak Fire started within the Selway-Bitterroot Wilderness of the Bitterroot NF, in close proximity to the Lolo NF boundary. When the Lolo Peak Fire started, the Bitterroot NF Forest Supervisor delegated authority for oversight and management of the fire to the Lolo NF but continued to engage in planning meetings as a stakeholder. Line officers from the Bitterroot NF also continued to manage Forest

<sup>7</sup> For more information, go to the Wildland Fire Lessons Learned Web site at <https://www.wildfirelessons.net/orphans/viewincident?DocumentKey=de80d13d-c32f-4b6b-bb12-f5833e51d32d>.

<sup>8</sup> An Agency Administrator that is qualified to have delegated authority over a high complexity wildfire.

<sup>9</sup> An individual acting in an Agency Administrator role certified at the level required by the incident complexity and delegated authorities to provide relief and support.



closures and engage community members and partners, and all were satisfied with the communication and decisions from the Lolo NF.

Due to the remote location of the fire—steep, rugged terrain; a high density of snags; the escape routes



Figure 7: Aerial photo of the Lolo Peak Fire illustrating the terrain and vegetation in which the fire was burning.

and safety zones—the decision to go indirect<sup>10</sup> was made (see Figure 7). The Lolo NF staff made a conscious decision not to engage ground resources at that time because there was no viable way to remove an injured firefighter from the area:

*“One of the main decision points is—if you put people in there, can you get an injured firefighter out?” –Forest Fire Management Officer*

Higher priority fires on the Forest that were imminently threatening communities required all available air resources, leaving the Lolo Peak Fire unstaffed for the first two days. On July 17, when the fire was five acres in size, a helicopter became available and was utilized in an attempt to moderate the Lolo Peak Fire spread. The tactic was ineffective, and the mission was

### What exactly is a “Big Box” Strategy?

*The phrase “big box” is a commonly used term in wildland fire. However, there is no explicit definition for the term, and its meaning may vary from Forest to Forest and even person to person. For the sake of this narrative, the “big box” (or “small box”) strategy as understood by those involved, is a suppression strategy that establishes pre-planned, indirect control lines to the north, south, east, and west of a fire. Personnel has deemed these indirect lines to be realistic options for containing a fire’s spread, essentially boxing it in. These strategies tend to be dynamic and can evolve as opportunities arise or conditions change.*

aborted. Initially, the fire was managed by a local Type 3 Incident Commander. However, the Lolo NF wanted to begin formulating a long-term strategy for the fire. The Forest Fire Management Officer (Forest FMO) noted: “We were anticipating this to be an intensely aggressive fire that was going to burn for a long time with heavy impacts to the public before being controlled.” The Lolo NF decided to request that the Type 2 Incident Management Team (Type 2 IMT) managing the Slide Rock Fire also assume control of the Lolo Peak Fire. The Type 2 IMT enlisted the help of a local Long-Term Fire Analyst (LTAN) to run some predictive models for the Lolo Peak Fire. While developing a “big-box” plan for the Lolo Peak Fire (see inset below), other fires that the Type 2 IMT was managing began to heat up, stretching the Type 2 IMT thin. The Lolo NF decided to order in another team to take over the Lolo Peak Fire.

Although the fire was still only 200 acres, the Lolo NF requested a Type 1 Incident Management Team (Type 1 IMT) due to the improved span of control and increased fire behavior analysis capacity it could provide. In addition, a Type 1 IMT would come with a Liaison Officer, a person that would have the

<sup>10</sup> A method of suppression in which the control line is located some considerable distance away from the wildfire’s active edge.



knowledge and ability to provide strong information sharing to the surrounding communities. This was a qualification the Forest desired, as the fire was burning in an area that had not seen fire since 1876. An additional factor in ordering a Type 1 IMT was the knowledge that the next team up in the IMT rotation was one that had a working knowledge of the local terrain and vegetation. The IMT also had strong relationships with both Agency employees and key community stakeholders that had been established through prior experience on the Lolo and Bitterroot national forests. The Type 1 IMT took command of the Lolo Peak Fire on July 21 at 1800.

## Strategic Decisions

### Building the “Big Box”

Some direct tactics, primarily through the use of aviation resources, were initially taken on the fire with the goal of keeping the fire within the Lolo Creek Drainage and at a high elevation. A small amount of aerial ignition was conducted along the Bitterroot Divide to “square up” the southern edge—to keep the south end of the fire perpendicular to the divide. Retardant drops were made along the west side of the fire while helitack crews worked to control spot fires along the east side of the Bitterroot Divide.

The overall focus of the Type 1 IMT was to build on the “big box” strategy conceptualized by the Lolo NF and the Type 2 IMT by identifying boundaries away from the fire’s edge that would be realistic options for containing the fire’s spread. The terrain and fuel types at lower elevations in the flats were much more favorable for line construction than at higher elevations. However, the flats were located primarily on private and state lands. The Forest Supervisor stated that “the intent was to consider firefighter exposure first and foremost and engage the fire in areas that would have a high probability of success.”

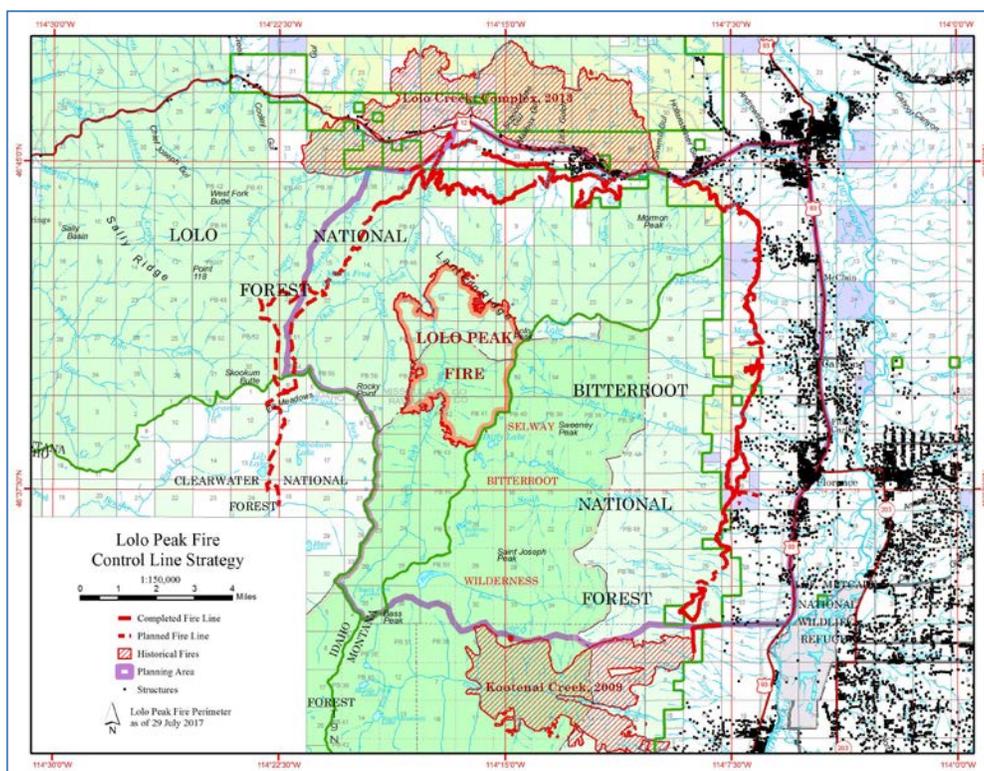


Figure 8: Map of the "big box" plan that was being implemented on the Lolo Peak Fire.



A plan was developed to build a primary control line in these flats, and the Montana Department of Natural Resources and Conservation and Missoula Rural Fire Department were included as Agency partners. The primary control line would be approximately 30 miles long (see Figure 8) and would require extensive coordination with the public, private landowners, and cooperating agencies.

To implement the “big box,” the Type 1 IMT needed to obtain permission from each individual landowner to construct dozer line on their land. The Division Supervisors spent days working with individual landowners to gain permission to create all 30 miles of primary control line. The Type 1 Incident Commander (ICT1) noted, “That’s a unique situation. Our Divisions were out there with landowners negotiating with each one individually, 900 of them.” Regarding the situation, Division Supervisor H stated:

*“I felt like a used-car salesman.” – Division Supervisor H*

Once permissions were obtained, three taskforces<sup>11</sup> of heavy equipment laid dozer line between existing roads to establish a continuous control line along the east side of the “big box.” A few landowners in the area were uncomfortable with dozer line and requested that hand line be used on their property instead. A couple of Hotshot crews, Vista Grande and Wyoming IHCs, were brought in to complete the requested hand line and to snag along some of the dozer line. The “big box” strategy was in place by July 30, completed more quickly than expected.

The Type 1 IMT worked hard at explaining to the resources assigned to the Lolo Peak Fire the reasoning behind the long-term strategy through repeated briefings and write-ups in the ICS-209.<sup>12</sup> There were some discussions with the Washington Office regarding a lack of “accomplishment” of fire containment reflected in the daily reporting. This was addressed by clarifying that the line created was indirect primary control line.

Post-Incident Reflection

*“We did the right thing to minimize exposure, but we knew the plan was going to be labor intensive.” –Delegated Agency Administrator*

### **Shrinking the “Big Box”**

Fire behavior on previous large fires and current conditions caused the local Forest leadership to believe the fire behavior models were underestimating the Lolo Peak Fire’s spread potential. While spread along the southeast portion of the fire was checked along the Bitterroot Divide by rocky, unburnable terrain, more than 900 structures in the area were potentially at risk if the fire north of Carlton Ridge spread northeast, pushed by the area’s dominant southwest winds, and then moved south. FSPro<sup>13</sup> modelling conducted on July 29 showed that this was a possibility (see Figure 9).

<sup>11</sup> Any combination of single resources assembled for a particular tactical need, with common communications and a leader.

<sup>12</sup> An incident status summary form that is submitted daily for reporting specific information on incidents of significance.

<sup>13</sup> FSPro is a Fire Spread Probability (FSPro) model in the Wildland Fire Decision Support System (WFDSS). Go to [https://wfdss.usgs.gov/wfdss\\_help/WFDSSHelp\\_FSPro\\_Ref.html](https://wfdss.usgs.gov/wfdss_help/WFDSSHelp_FSPro_Ref.html) for more information.



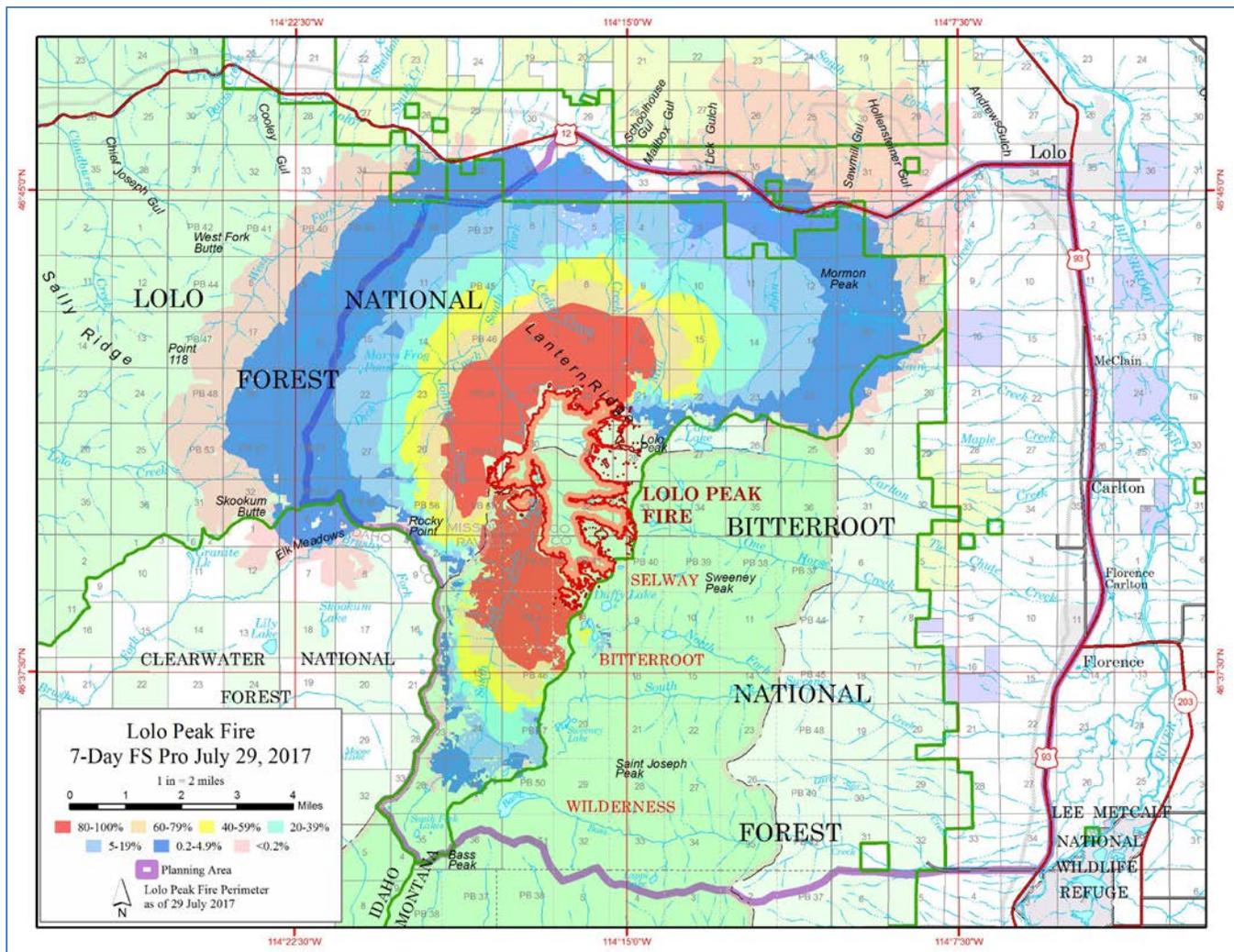


Figure 9: Lolo Peak Fire FSPro Map for July 29, 2017, showing potential fire spread for the next seven days.

Once the primary control line was completed, the possibility of the Lolo Peak Fire flanking east and threatening homes led fire suppression resources assigned to the fire to start looking for opportunities to “shrink the box.” They wanted to identify areas that offered viable options to decrease the size of the planned fire footprint. The Division Supervisor assigned to Division Hotel (DIVS H); his Division Supervisor trainee [DIVS(T)], a crewmember on the Vista Grande IHC who had detached from his crew to take advantage of this training opportunity; and several Vista Grande IHC overhead began studying the map and scouting the terrain. They identified a ridgeline on the map that had promise, but after scouting the ridgeline, they found that there was too much dead and down [trees] in the area. It was not a viable option. They continued to scout the area for two days looking for opportunities that would allow them to shrink the box.

During this time, they decided to re-evaluate the possibility of using Carlton Ridge Road, an east-west, four-wheel drive road that terminated at Carlton Lake, as a control line. The road bisects the Carlton



Ridge RNA to the north and the Selway-Bitterroot Wilderness to the south. Initially, the road was not found to be a viable option as it was routed through a thickly vegetated lodgepole pine stand and had several switchbacks, making travel time in and out longer than the team was comfortable with. As a part of the “big box” plan, dozer line had been constructed down a nearby abandoned ski run to be used as check line in the event that they needed to burn out the “big box.” This dozer line cut off the tight switchbacks on Carlton Ridge Road, reducing the travel time down the road from two hours to about 30 minutes. In addition, while DIVS H and DIVS(T) had been scouting, Vista Grande IHC had cut a new helispot along the road between H-40 and H-42. The IMT was now much more comfortable with using heavy equipment in that area as a result of the decreased travel time. The two days of scouting and planning by DIVS H, his trainee, and Vista Grande IHC overhead had paid off.

They presented their plan to the Field Operations Section Chief (Field OSC1), and everyone involved liked it well enough to present it to the AAs and ARs in charge of the Lolo Peak Fire. The IMT knew that there were “lots of opinions as to whether or not the RNA would burn;” however, everyone agreed that the lower elevation fuels would burn readily. Using the road along the ridge as part of the primary control line would decrease the chances of the fire spreading south, reducing the number of structures at risk by about half. All of those houses east and south of Carlton Ridge would be taken out of the risk equation. Using this road, which terminated at Carlton Lake, a high-elevation, human-made lake in a rocky bowl with minimal vegetation, was the only viable option the IMT could find to shrink the box. On the morning of August 1, the Deputy Incident Commander (Deputy IC) of the Type 1 IMT; DIVS H, who would be in charge of the proposed operation; and DIVS(T) presented the idea to the administrative leadership of the Lolo Peak Fire.

#### **Differing Perceptions: Treating within the Carlton Ridge Research Natural Area**

The strategy to utilize the Carlton Ridge Road as a primary control line was presented to the Acting Agency Administrator (Acting AA) as well as to the Forest Supervisor and a District Ranger, both off of the Bitterroot NF. The Lolo NF Forest Supervisor, who was the delegated Agency Administrator



A stand of subalpine larch located in the Carlton Ridge RNA.

*The Carlton Ridge Research Natural Area, created in 1987 by the Lolo NF, supports a distinctive high-elevation subalpine Forest habitat type. The 900-acre RNA is home to the most extensive “Forest” of subalpine larch in the United States as well as a large stand of old-growth whitebark pine, a candidate for listing as Threatened or Endangered under the Endangered Species Act. The RNA has provided a valuable ecological baseline for a high degree of research aimed at understanding ecological processes and measuring ecological change.*

*The Lolo NF’s 1986 Land & Resource Management Plan states that fire suppression methods should minimize impacts to RNA values and that the use of retardant is not allowed. It otherwise defers to the Forest Fire Management Plan for guidance on allowable tactics.*



(Delegated AA) for the Lolo Peak Fire, was unable to attend the meeting and requested that Acting AA participate in the discussion in his absence.

The IMT presented the plan to reduce the “big box” that would use Carlton Ridge Road as a holding line that helicopters could burn off of in the RNA and hold with retardant in the Wilderness when fire activity demanded it. No personnel were intended to be in the high-elevation areas when the burn took place.

However, according to the IMT, the road “needed a lot of work” to be viable. The proposed plan involved treating the area along Carlton Ridge Road in three segments (see Figure 10). The first segment, which had already been completed during “big box” prep work, cut off the switchbacks on the road to the top of the ski hill with dozer line. The second segment called for treating the lodgepole pine fuel type with feller-bunchers, from the top of the ski run to the RNA boundary within the 30-foot easement along the road. The third segment, which had a much lighter fuel load, called for snagging along Carlton Ridge Road within the easement where the road divided the RNA and Wilderness area. Most everyone involved seemed to agree that this plan was not going to be utilized until after the Type 1 IMT timed out and a different IMT took over management of the fire.

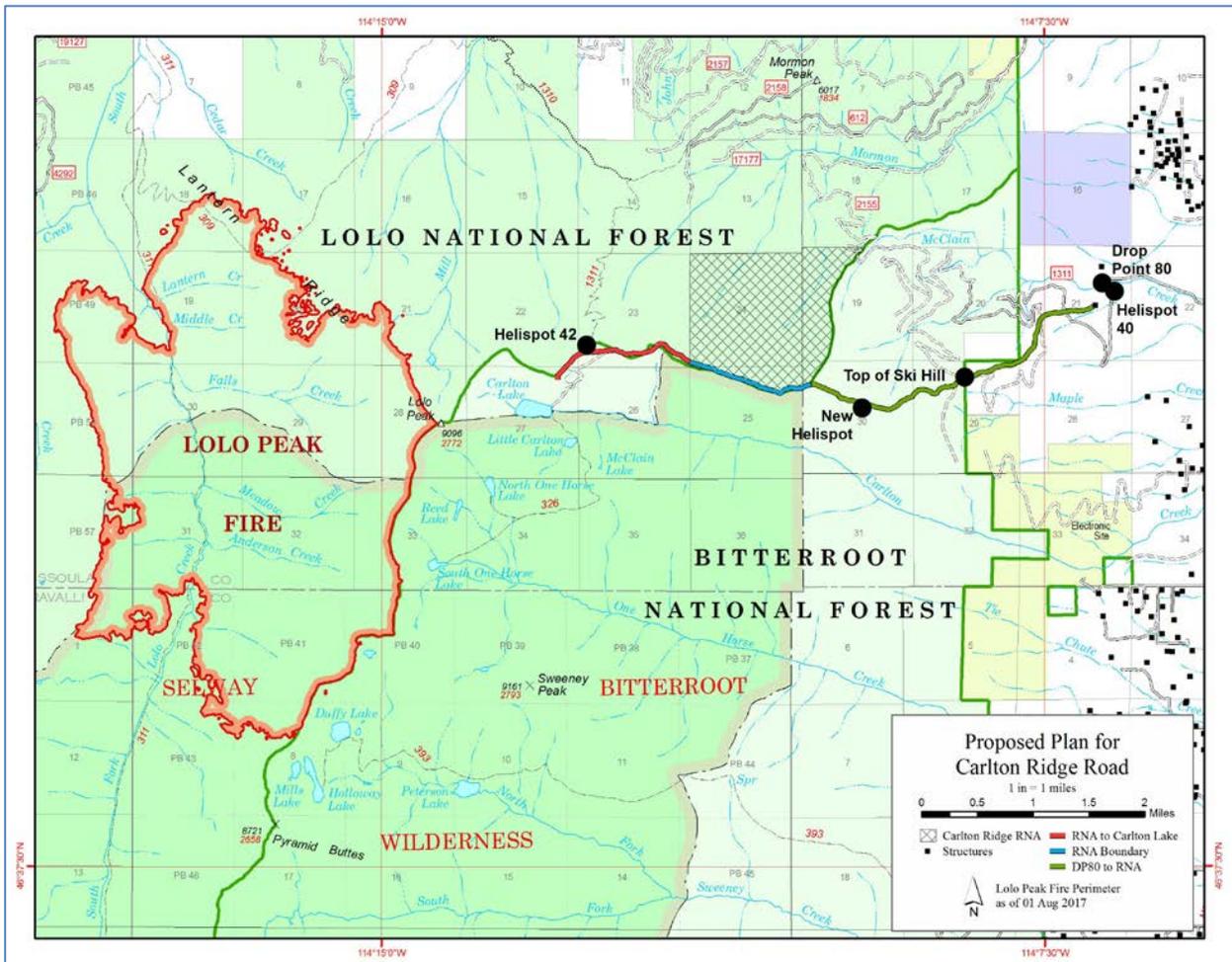


Figure 10: Map showing the proposed plan for Carlton Ridge Road.



Leadership from the Lolo and Bitterroot national forests began a robust conversation with the Type 1 IMT about the proposed strategy to reduce the size of the “big box.” Acting AA asked, “What am I buying with this strategy?” The answers he got from the Type 1 IMT included a smaller fire footprint, shorter duration, and a reduction in exposure. These were all appealing to the local Forests’ leadership because of the high level of fire activity they were experiencing early in the fire season. Knowing that this fire was likely to burn until a season-ending event in the fall, the IMT wanted to create a plan that would set up the Forest for long-term success while minimizing the risk to homes and private property to the extent possible.

Post-Incident Reflection  
“We invested a lot of time developing that particular strategy using the Carlton Ridge Road. We had full support and buy in from the District, Forest, and Regional Office for that strategy.” –Type 1 IC

According to the Type 1 IMT, Acting AA, and Lolo NF AR, the plan was not a hard sell. All involved agreed that, although this plan had just a moderate probability of success, it was the only plan that had the potential to reduce the risk of fire affecting the nearby communities. Delegated AA stated the objective of shrinking the box was to “thread the needle to figure out the right course of action. This was the best chance we had to reduce exposure to those structures.”

Post-Incident Reflection  
“We would probably have had the crew cutting snags even if we were authorized to use heavy equipment. There was a lot of work to do in the lodgepole pine.” –DIVS(T)

At that meeting they discussed the use of feller-bunchers along Carlton Ridge Road within the Wilderness/RNA boundary. The IMT believed fire suppression work in the RNA would require Regional Forester approval.

Acting AA and Lolo NF AR committed to track down what was needed to obtain the authority to use chain saws and/or feller-bunchers in the RNA. Acting AA, who was participating in the discussion as an advisor for Delegated AA, left that meeting with the impression that the team was going to begin treating the 2.25-

mile stretch of Carlton Ridge Road from the top of the ski hill up to the RNA boundary with feller-bunchers because that was the location of the majority of the work load. He felt that there would be further discussions in which he could participate regarding the use of feller-bunchers or chain saws within the Wilderness and RNA. He then left to address AA responsibilities at another fire on the Forest, assuming that he would have time to investigate and begin the approval process for the use of feller-bunchers in the RNA before the next discussion.

Post-Incident Reflection  
“This Forest is not against the idea of allowing fire to play its natural role in the landscape; this just was not the right time to try to purposefully manage a long duration incident.” –Fire Management Officer

Post-Incident Reflection  
“With the exception of utilizing retardant, the Forest would have considered any plan the IMT presented, including the use of heavy equipment in the RNA.” –Agency Representative

In the meantime, personnel from the IMT, DIVS H, DIVS(T), and ground resources continued to develop the plan of how to treat within the RNA and Wilderness. Initially, at one of the meetings where the developing strategy was discussed, DIVS(T) “got the sense that leadership from the local Forest thought the team was requesting the use of heavy equipment in the RNA and that the idea was not being well-received.” The IMT decided to clarify their intent to the Forest leadership during the next discussion and ask only for approval to use chain saws in the

RNA. From both DIVS H and DIVS(T)’s perspectives, the use of chain saws seemed to be a much more palatable idea for Forest leadership.



Later that day, on August 1, they presented an updated plan via text message to Lolo NF AR that proposed treating Carlton Ridge Road within the RNA by hand-falling snags with oversight from a Resource Advisor. Lolo NF AR then wrote up the plan that included the hand-falling of snags in the RNA and consulted with the Delegated AA, the Bitterroot NF Forest Supervisor, Forest Service researchers, and the Regional Forester. The plan for hand-falling was approved on the afternoon of August 1.

The Lolo NF AAs, Agency Representatives, and Fire Management staff felt there was a good overall strategy in place, strong leadership, and that they were acting proactively on the Lolo Peak Fire. However, some of the other fires in the area were in more of a reaction mode, and repeated unsuccessful tactics led to concerns among AAs, ARs, and Fire Management staff. They felt that the strategic planning of the IMT was allowing fire suppression resources to stay ahead of the Lolo Peak Fire, and the administrative leadership all agreed that this “was not the fire they were worried about.”

### Snagging in Carlton Ridge RNA

The next day, August 2, Vista Grande IHC started working in the RNA while mechanical equipment began working in the lodgepole pine (*pinus contorta*) below the RNA.

While Vista Grande IHC was falling snags within the RNA, Wyoming Interagency Hotshot Crew (Wyoming IHC) was reassigned to Division H from Division J to prep line and swamp<sup>14</sup> behind the heavy equipment. Wyoming IHC had been borrowed from another division and did not have context for the plan on Carlton Ridge or why the decision had been made to shrink the box. The Wyoming IHC Superintendent said that “there was a lot of uncertainty as to why we were being utilized to work behind heavy equipment. We had expected to team up with Vista Grande IHC to help snag the road.” They never did meet up with Vista

Post-Incident Reflection

*“Falling snags with chain saws is part of the job. We don’t want it to turn from a high-consequence, high frequency activity to a high-consequence, low frequency activity.” –Vista Grande IHC Captain*

Grande IHC, and the superintendent was surprised at how far apart the two crews were, never even hearing Vista Grande IHC’s chain saws running. Although Wyoming IHC understood the overall indirect “big box” strategy for the fire, the crew was trying to understand why they were on that ridge. They began their work at the top of the abandoned ski run at 1230, working their way west (upslope). A few Wyoming IHC crewmembers stated that they felt like what they were doing was busy work, and the tempo of operations was “pretty mellow.” No one seemed to be in a big hurry; the fire was quite a ways away from the area in which they were working.

An Advanced Emergency Medical Technician (A-EMT) and a Paramedic (EMT-P) were also assigned to Division H that afternoon. The Wyoming IHC Emergency Medical Technicians (EMTs) and A-EMT had developed a working relationship while on another division together. They were reassigned in the afternoon to Division H, where EMT-P had been the entire shift. EMT-P made a concerted effort to build rapport with the new resources. EMT-P and A-EMT were staged at the top of the ski runs.

Post-Incident Reflection

*“It was not normal to have the medics out with us. Normally they would be down at the drop point.” –Wyoming IHC EMT*

Around 1330 that day, EMT-P was having a conversation with DIVS H about the Strawberry Fire fatality’s medical response. About an hour later, emergency traffic from the Vista Grande IHC Captain to DIVS(T) rang out from the radio:

<sup>14</sup> To clean out brush and other material.



“We’ve had a tree strike with a serious injury; you need to order a medevac ship immediately. We are working on the 9-line.”

## The Response

On the afternoon of August 2, ICT1 was in a meeting about risk management when he was notified that Brent Witham had been struck by a falling dead whitebark pine tree. Not long after, he would find out that Brent’s injuries had been fatal.

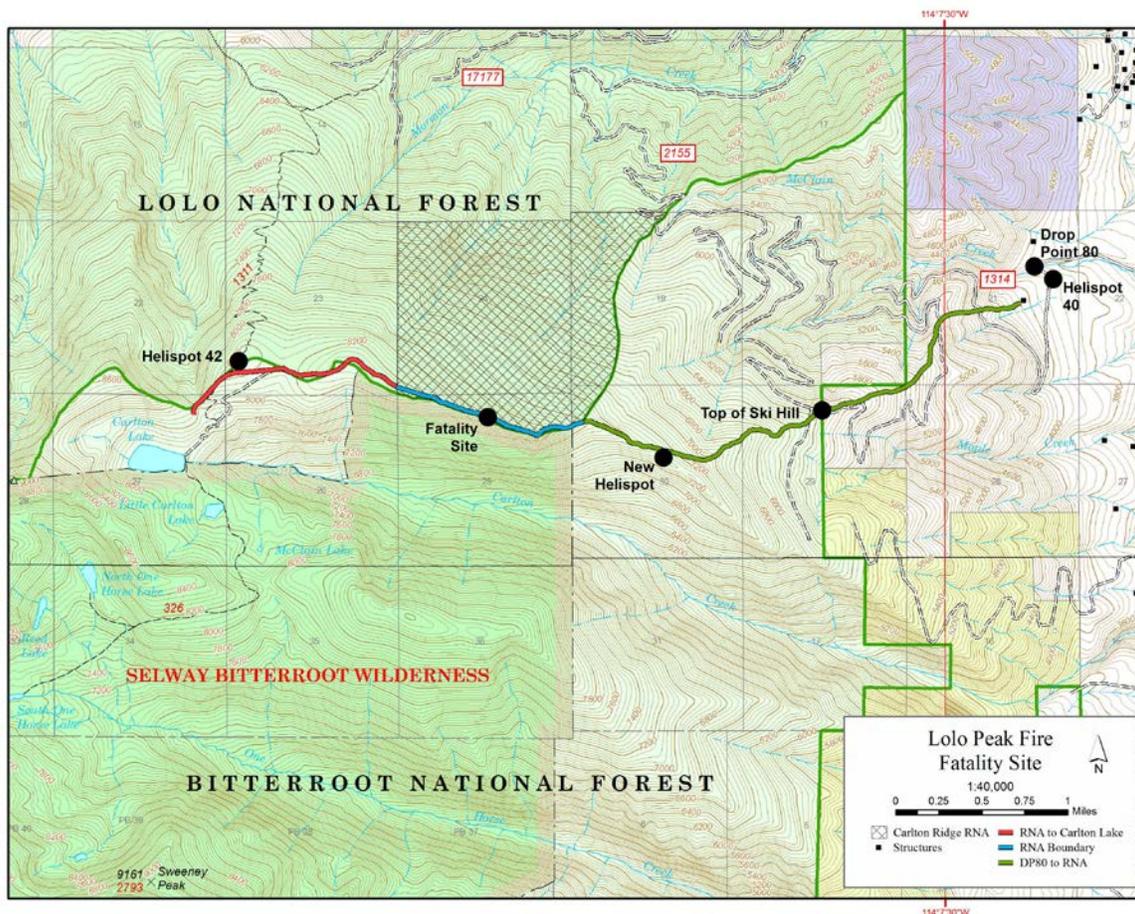


Figure 11: Map showing the accident site and other important locations along Carlton Ridge Road.

Fellow Vista Grande IHC crew members and their assigned Resource Advisor (READ) were on site and immediately ran to help Brent. While Vista Grande IHC crew members cleared branches away so crew EMTs could provide care, READ cut the tree off the road so that vehicles could get through. Crewmembers that were first on-scene reported that Brent initially had a pulse, but nine minutes later they lost Brent’s pulse and began administering CPR. The Vista Grande IHC Captain (VG Captain) radioed DIVS(T) at 1436 to notify him of the medical emergency.

EMT-P and A-EMT immediately began driving towards the accident location from the top of the abandoned ski run (see Figure 10). DIVS(T) also began driving up the road, briefly stopping to pick up two EMTs from Wyoming IHC. Upon his arrival at the accident location, DIVS(T) was delegated as the on-scene IC for the incident within an incident (IWI). Back at camp, as the Type 1 IMT gathered in the Communications Unit, ICT1 designated the Deputy IC as the IC for the incident within an incident. While



en route to the scene, DIVS(T) implemented the 9-line medical response process.<sup>15</sup> There was chatter on the tactical channel about whether to request a short haul aircraft<sup>16</sup> or a medevac helicopter.<sup>17</sup>

DIVS H knew without a doubt the situation was very serious. He immediately notified the equipment operators to clear the way for emergency medical response and noted difficulties with radio transmission due to terrain. He contacted Field OSC1 via cell phone. DIVS H expressed the importance of providing a hospital liaison for the injured firefighter and for getting the crew off the hill, noting to Field OSC1:

*“We can’t drop the ball on this. We have only one chance to get this right.”*

When EMT-P and A-EMT arrived on scene at approximately 1445, an EMT from Vista Grande IHC was already working on his fellow crew member. Brent had been placed on a backboard, with automated external defibrillator (AED) and oral pharyngeal airway (OPA) in place. Chest compressions were underway. Although Brent appeared to have substantial internal and external injuries and was asystole<sup>18</sup> when the medics arrived, the Vista Grande IHC Superintendent reported initially finding a pulse, and VG Captain said Brent had been breathing right after the accident. Brent was placed in READ’s truck bed with the two Wyoming IHC EMTs, VG Captain, A-EMT, and EMT-P for transport to H-42.



Figure 12: Photo of the dead and down material along the route to H-42.

Shortly after the accident occurred, the designated medevac helicopter for all of the fires in the Missoula Valley was requested, and the crew was told that the patient may need to be short-hauled. The helicopter crew immediately began preparing the ship for short-haul. Medical kits were also loaded into the helicopter in case the mission required medical transport. Although they did not have a specific location, they launched the ship to get into the general vicinity of the medical response, gathering the exact location while en route. Once the helicopter was over the crew’s location, the Helicopter Manager (HMGB) was able to size up the IWI. Based on the patient’s short distance from H-42, HMGB concluded that loading the patient internally would be the best option.

There was some confusion on the ground as to the helispot’s actual location. EMT care and resuscitation efforts continued during the drive along Carlton Ridge Road to the helispot, H-42. Although the helispot Vista Grande IHC had cleared a couple of days prior was slightly closer, the decision was made to

<sup>15</sup> A medical incident report form that provides a systematic standard process for reporting medical incidents/injuries.

<sup>16</sup> A helicopter with the capability to transport one or more persons suspended on a fixed line (105’-250’) for a short distance. Normally used when a person is in a limited or inaccessible location to a safe landing area.

<sup>17</sup> A helicopter configured, staffed, and equipped to respond, care for, and transport a patient.

<sup>18</sup> A cardiac arrest rhythm in which there is no discernible electrical activity on the ECG monitor.



transport Brent to H-42 because the hike in was relatively flat; the road was narrow; the vehicles were already pointed towards H-42; and the heavy equipment working below the RNA could be avoided. The trip to the helispot over the unimproved four-wheel drive road was perceived by those transporting Brent as a much longer trip than anticipated. Memories of the drive time ranged from 10 to 20 minutes, much more than the four minutes they had been told to expect. After stopping as close as possible to the helispot, it was still a one-eighth mile hike over dead-and-down trees to reach the helispot (see Figure 11).

*Post-Incident Reflection*

*“The crew on the ground did an excellent job. Couldn’t have done anything different. It was one of the smoothest nine-lines I’ve ever been involved with. It was as smooth as it can be.” – EMT-P*

Upon arrival at H-42, EMTs and medics had performed cardio-pulmonary resuscitation (CPR) and other resuscitation measures for a total of 35 minutes. At that time, a discussion was had between the Medical Unit Leader and EMT-P via the radio about whether or not to continue, and a collective decision was made to cease attempts at resuscitation in the field at 1511. The medevac ship was shut down, and Vista Grande IHC members that were at H-42 were given time to spend with Brent before he was transported off the line. Brent was transported with EMT-P and VG Captain by helicopter to DP80, where

they were met by an ambulance and the Missoula County Sheriff’s Deputy, who was also the County Coroner. Based on witness interviews, the Coroner concluded that Brent had succumbed to his injuries shortly after the tree had struck him even though he did not personally see Brent Witham’s body until about 1545.

Wyoming IHC, who had been hiking quickly up the road to provide any assistance they could, met members of Vista Grande IHC as they came down the road. The Vista Grande IHC members relayed that there was nothing more that could be done, and they all hiked back down.

Upon hearing a patient update, DIVS H called Field OSC1 again and discussed getting the crew off the hill and to a hotel. He wanted to ensure Vista Grande IHC would be diverted from seeing the medevac ship and Coroner.

At 1445, the Lolo NF Forest Supervisor received a call from the Deputy IC and IC informing him of the ongoing medical incident with CPR in progress. Seeking clarification about the nature of the incident, the Forest Supervisor asked, “What crew?” and “Was it confirmed fatal?” These questions needed to be answered before he could begin the notification process. At about 1500, he reached the Regional Forester and gave her the news of the medical incident. Soon thereafter, the Forest Supervisor was updated with news of Brent’s death. He immediately started asking questions of himself, the hardest one being:

*“How—after all that thought, all that planning, all that talking—did this still happen?”  
– Lolo NF Forest Supervisor*



The Forest Supervisor said the news came like a “punch in the gut,” and he immediately found himself wondering how he was going to be “that leader” and break the news to the “walking wounded,” having already experienced a fire fatality on the Forest two weeks earlier. The Assistant Forest Fire Management Officer (AFMO) noted this was “the third time I have had to pull the dispatchers together and tell them we have had a fatality.” This was the third tree-strike fatality affecting Lolo NF employees within a year.

*“I don’t know how to even talk about risk management now. We’ve had three fatalities in the last year. Everything we ask firefighters to do is hazardous.”*

*– Forest Fire Management Officer*

### In Memory of Firefighter Brent Witham



Figure 13: Firefighter Brent Witham was a Type 2 Faller and fourth year crewmember and Sawyer with the Vista Grande InterAgency Hotshot Crew based out of the San Jacinto Ranger District on the San Bernardino National Forest in California. He lost his life on August 2, 2017 during a tree felling operation on the Lolo National Forest in Montana.



## **Coordinated Response Protocol (CRP) Team Members**

**CRP Team Lead** – Bill Avey, Forest Supervisor, Helena-Lewis and Clark National Forest

**Shadow CRP Team Lead** – Melany Glossa, Forest Supervisor, Beaverhead-Deerlodge National Forest

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