



*"I always knew the possibility was there for Jumpers to get hurt, but you don't think it will happen."
-Dispatch*

July 2018

Miner Camp Peak Fire

Facilitated Learning Analysis

Table of Contents

Facilitated Learning Analysis Objective	2
Learning More about Smokejumping.....	2
Setting.....	3
Narrative.....	3
The Accidents	3
Medical Response.....	8
Decision Makers	9
The Next Day.....	10
Lessons Learned	11
Sensemaking.....	12
Events Timeline	12
Understanding “Stuff Happens”	13
Risk and Risk Trade-offs.....	13
Air Ambulances.....	14
Short-Haul.....	14
Hospital Liaisons and Office of Workers’ Compensation Programs.....	14
Staffing.....	15
On the Fillmore District	15
In the Supervisor’s Office	15
The Water Cooler	15
Closeout.....	16
FLA Team Members.....	16

Facilitated Learning Analysis Objective

The objective of a Facilitated Learning Analysis (FLA) review is to tell the story of what happened and describe the expectations and decision-making conditions from the participants’ points of view. At the core of any FLA is the conviction that unintended outcomes happen despite well-intentioned and extremely capable employees.

This FLA is not intended to examine the value or efficacy of the Smokejumper program or to provide a large-scale review of multiple Smokejumper injuries that have happened this season. It is simply intended to examine a single, unique incident where three Smokejumpers were injured on a fire jump. Our review begins with the premise that Smokejumpers were an available resource that could be used for fire operations. Our goal is to tell the story of what happened from the perspectives of those involved and to provide an opportunity for the reader to make sense of the decisions and actions that were taken on the Miner Camp Peak Fire.

Learning More about Smokejumping

It’s safe to say all of us have heard of Smokejumpers, but do we understand what they do? To help readers understand a small part of the smokejumping operations, we will share a little about what they do.

Streamers are 20-foot strips of colorful crepe paper weighted with sand, designed to fall at the same rate of descent as a Jumper.

Once a jump plane arrives over a fire, the plane’s occupants get a general size-up of the fire to gather situational awareness and determine how many Jumpers will be needed to fight the fire. Next, they determine a safe place for the Jumpers to land (jump spot) near the fire. The jump



Figure 1. Streamers.

plane completes a low pass over the jump spot at around 500 feet Above Ground Level (AGL) for the Smokejumpers to get a closer look at the intended area to land and to identify any hazards.

Once the hazards are determined, the jump plane climbs to 1,500 feet AGL and begins streamer operations to determine wind velocity, wind direction, and where the Jumpers will exit the aircraft (release point). The Spotter, who is the jump mission coordinator, conducts jump operations. A load of Jumpers may contain a mixed load, which is a combination of both round parachute Jumpers and Ram Air parachute Jumpers (commonly referred to as rounds and squares, respectively). The round Jumpers exit the aircraft at 1,500 feet AGL and the Ram Air Jumpers exit at 3,000 feet AGL. During Smokejumper operations both the Spotter and the Smokejumper are responsible for continuously analyzing risk and following very specific procedures in order for the Jumpers to exit the jump plane safely.

The Forest Service Smokejumper program currently uses both round- and square-style parachutes. For more information about smokejumping, go to this [video](#).¹



Figure 2. Round (left) and square (right) parachutes.

¹ Go to <https://www.youtube.com/watch?v=wNuiwawzmbY>, Lane Lamoreaux.

Setting

By late July, the National Forests in Utah had been busy with fire activity for several months. Fire activity in the Region and across the nation had been growing, and resources were getting more limited as the summer progressed. The National Preparedness Level (PL) went to 5² on July 28, and the geographic area went to PL 5 on July 29. Smoke had been constant in Utah, both from local fires and drift from larger fires in California, Oregon, and Nevada. Season intensity had been ramping up.

"We are now in dirty August." –Dispatch

Narrative

The Accidents

The jump plane and Jumpers were in Winnemucca, Nevada, waiting for the next fire. The morning of July 29 there were no known assignments from the night before when they checked in at 0800. The Jumpers were released to do PT (physical training). The Pilot and the Spotter went to the airport for the morning briefing and at around 0830 were handed a resource order for a jump. The Spotter thought, "This can't be for us" because this was the first he had heard of the request. The Pilot did pre-flight checks and waited for the Jumpers to be gathered. This took some time as many of the Jumpers like to run trails in the surrounding area.

Once all the Jumpers returned, they suited up. They loaded the plane with a full, mixed-load of experienced Jumpers³ (a total of eight), five round and three square parachutes, and lifted off at about 1030. The Pilot for this mission was a relief Pilot with whom the Spotter had worked on only one other mission.

"Seemed like a straight-forward jump." –Jumper 1

The Pilot and Spotter knew the Pilot would need to stop for fuel prior to flying to the fire. As one Jumper put it, "This was just endemic to working in Nevada: long flights and having to stop for fuel." While in route, the plane's aft fuel level low light came on, which was non-standard. Per procedures, they landed at the closest airport in Fillmore, Utah. The original plan was to go to Richfield, Utah, to fuel prior to the light coming on. Procedures were followed, allowing

the plane to remain in service. Despite confirming the availability of fuel before they arrived in Fillmore, the fuel tanks there only produced 32 gallons of fuel. The fuel truck in route to fill the tanks was also delayed, contributing further to delayed arrival on the incident.

After refueling, the plane proceeded to the fire. They were over the fire by about 1630, six hours after they departed Winnemucca. The fire was still around 1/10th of an acre, with four to six trees burning on the upper 1/3 of the slope.

The jump spot location was 1 and ¼ to 1 and ½ miles from the fire. The Pilot did a low pass and noted it seemed like normal afternoon turbulence. The jump spot was terraced, and the slope was about 10 to 20 percent with terraces about 20 to 30 feet apart. In retrospect, one of the Jumpers stated, "This was nothing out of our skill set." The Jumpers and the Spotter felt the jump spot was good and made plans for the jump. At this time they climbed to 1500 feet AGL and threw two sets of streamers. The streamers indicated Jumpers would experience less than 500 to 550 yards of drift. The first set took one minute 10 seconds, and the second took one minute 45

² The National Multi-Agency Coordination Group (NMAC) established preparedness levels to assure that firefighting resources are ready to respond to new incidents. They are dictated by weather conditions, fire activity, and resource availability. The preparedness levels range from 1 to 5, with 5 being the highest level of preparedness.

³ For the purpose of anonymity Jumpers are only identified based on the order in which they jumped out of the plane.

seconds to reach the ground. In a stable air mass, streamers will hit the ground in about one minute. In that one minute streamers will travel about 100 yards distance for each three mph wind.

Therefore, 500 yards of drift would suggest winds of 15 mph, which is approaching the suggested maximum wind speed for a round parachute. However, that the streamers took one minute 45 seconds to travel the 500 to 550 yards suggests that the average wind speed in the wind column was closer to nine to 10 mph, well within the suggested wind speed parameters for the round parachute. The jump spot looked great from the air; it was a large and open rounded hill.

Jumpers 2, 3, and 7 mentioned that their previous jump in Nevada had long streamer times and lots of wind but had successful outcomes and good landings. This experience made them think this jump would be similar. The Jumper in Charge (JIC), Jumper 2, and the Spotter determined that the whole load of eight would jump due to the terrain where the fire was located and the long hike to the fire. This decision got the whole load of Jumpers excited and pumped up for the fire.

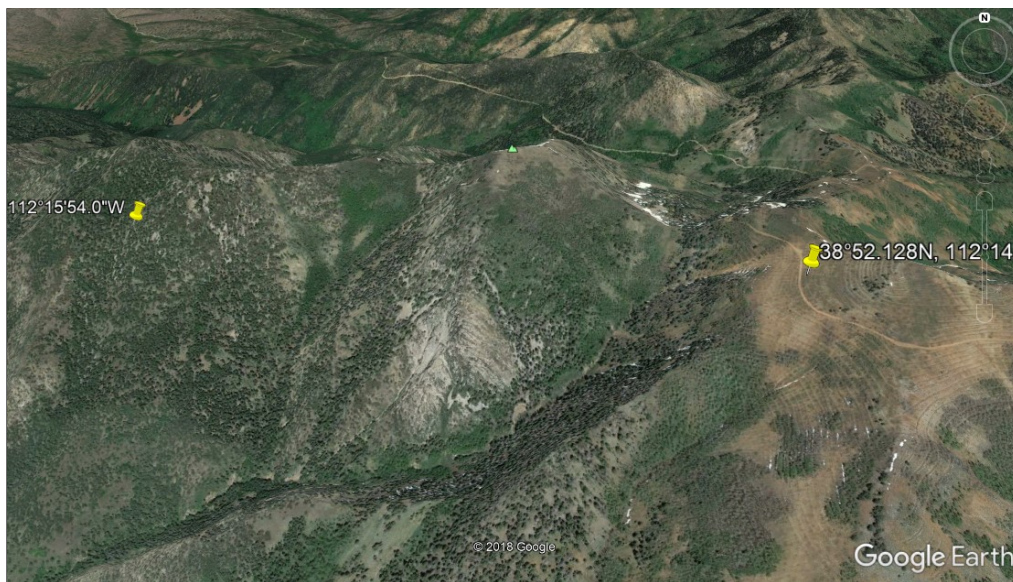


Figure 3. Fire location (left pin) and jump spot (right pin).



Figure 4. Closer view of the jump spot.

Jumper 1 was the JIC, the first one in the door. He was a little concerned by the wind conditions because he was using a round parachute. As is standard, Jumper 1 and his jump partner (Jumper 2) talked about plans for the jump. One option was to gain altitude and have the squares go first because they are capable of handling higher winds and would be able to provide feedback on the ground winds to the rest of the Jumpers. Alternatively the JIC could go as a single person “stick” (jump alone) and give feedback on the winds and the spot. The JIC preferred going alone instead of gaining altitude for the squares, which would further delay getting people on the ground. After these conversations everyone had buy in and gave the “thumbs up.”

The JIC jumped alone, and his parachute opened with twisted lines, which isn’t uncommon for a round parachute. The twisted lines were not a factor on the Jumper making the jump spot. As he was descending, he did a lot of quartering and “crabbing,” maneuvering himself to get to the jump spot. At about 200 feet AGL, he was coming in backwards. “I kept waiting for the

Have you ever worked through an injury?

chute to settle,” he said. At roughly 75 feet AGL he felt like his chute had settled, and he was ready to perform a Parachute Landing Fall (PLF).⁴ Prior to landing, the Jumper experienced down air again and oscillated, which forced him to have a hard landing on his left side. He ended up landing hard and hitting his head and shoulder on a rock.

- Jump Order & Chute Style*
- Jumper 1-round*
 - Jumper 2-round*
 - Jumper 3-round*
 - Jumper 4-round*
 - Jumper 5-round*
 - Jumper 6-square*
 - Jumper 7-square*
 - Jumper 8-square*

The Spotter was watching all of this occur from the plane; seeing all of the oscillation and the landing, he expressed concern to Jumper 2 that he could be hurt. The JIC fumbled getting to his radio, feeling like it took a long time to call the plane. He called back to Spotter, “Gusty winds below 200 feet and minor shoulder injury. I’m good; send ‘em.”

One of the next two Jumpers was an EMT (Jumper 3). After hearing that Jumper 1 had an injury, he planned to assess Jumper 1’s injuries upon landing. There was discussion between the Spotter and Jumpers, and it was determined to throw the medical equipment with cargo after the all Jumpers were on the ground.

The JIC watched the second stick land (two rounds). It was a good landing. These two Jumpers noted the smooth ride down. Jumper 2 said, “This was the softest landing in a long time—good ride down.”

The JIC was holding a streamer overhead as a wind indicator. As the adrenaline from the jump started to wear off, he realized how injured he really was. He knew he couldn’t take his jump gear off without help. His shoulder was getting tighter and tighter and the pain was moving into his chest. He knew he was going to have leave the fire. Jumper 2 came over to take the streamer and take over managing the jump spot, thus becoming the JIC. Since Jumper 2’s ride down was good, he told the Spotter to send the next stick.

⁴ PLF is a safety technique that allows the Jumper to land safely without injury. The technique is used to displace the energy of the body contacting the earth at high speeds. If executed properly, this technique is capable of allowing the Jumper to land uninjured during landing speeds that would otherwise cause severe injury.

The patient assessment on Jumper 1 was the priority for Jumper 3 (EMT). He didn't observe the third stick. Jumper 1 had point tenderness and substantial pain. Jumper 3 (EMT) assumed that Jumper 1 had a broken collar bone or at least the potential for a broken collar bone. He wanted to treat him conservatively because he was in the field, and he considered this a "yellow injury."⁵ At this time they confirmed with the jump plane to throw the medical gear with the cargo and notified them that Jumper 1 was going to have to leave the fire.



Figure 5. Side view of jump spot.

In the plane, Jumpers 4 and 5 (third stick, rounds) discussed the terrain features that may influence wind conditions. They could see the nearby Aspen leaves were moving, so they knew the ground winds may be a little higher. They made a plan about where to land in relation to the road and a nearby timber stringer.

Jumper 4 recounted, "I was coming into the spot backward, faced into the wind; as I was on final, 30 feet off the ground, I received a wind shift. This caused me to swing 110 degrees. I made contact with uphill terrain at force on my left side. I immediately realized my left wrist was broken. I grabbed my radio and let the Jumpers on the ground know I was injured." Neither the Jumpers on the ground nor those onboard the plane received this transmission.

On the ground, Jumper 2 contacted the plane and gave the okay to the next stick to jump (Jumpers 6 and 7, squares). Seconds later, Jumper 5 checked on Jumper 4 and then called the Spotter saying, "Abort, abort," as Jumper 4 was now a second injury they had to manage. The Spotter heard Jumper 5's radio transmission but Jumpers 6 and 7 were already out the door. At this point the decision was made that Jumper 8 would not jump the incident.

As Jumper 3 (EMT) was working with Jumper 1, Jumper 5 yelled over the rise in terrain that was preventing them from seeing each other. Jumper 4 was hurt and was just lying there in his jump suit. Because Jumper 1 was stable, Jumper 3 (EMT) felt comfortable leaving him to assess the second injured Jumper. Jumper 3 (EMT) ran over to Jumper 4 and carefully helped take off his jump gear. Jumper 4, who is also an EMT, put his left ankle brace on his wrist to stabilize it and asked Jumper 3 (EMT) to get the SAM splint from the medical gear. Jumper 3 (EMT) cut off Jumper 4's flight glove and wrapped his injury. He and Jumper 3 (EMT) determined that he had a substantially broken wrist with multiple fractures and decreased circulation presenting as tingling and loss of sensation in fingers. This triggered "red" for Jumper 3 (EMT).

⁵ Forest Service Emergency Medical Responders utilize a color code to indicate severity of injuries. Red indicates urgent life-threatening injury or illness; yellow indicates serious injury or illness; and green indicates non-life-threatening injury or illness.

“If it was really bad, they would tell us more.” – Dispatch

In the meantime the fourth stick was coming in for a landing. Jumper 6 said he had a good ride with lots

of time in the air. Once he landed and got his gear off he took over radio communications for the air ambulance. Jumper 5 was watching from the ground. He thought it looked like Jumper 7 had a smooth flight and a soft landing. Jumper 7 didn’t have any issues until he was on final approach. Jumper 7 said he experienced lots of “up air” and was having a hard time getting down that last 200 feet. He said “I thought I had time to do a correction.” The Spotter noted it looked like Jumper 7 was “hooting” (going fast).



Figure 6. Jumper 7 intended landing spot.



Figure 7. Jumper 7 actual landing spot.

Jumper 7 overshot his intended landing area and landed on the two-track road. When he executed his PLF, he hit his hand on a rock as he rolled. While he was taking off his jump suit, he was having trouble and knew something was wrong with his hand. Jumper 5 ran over to check on him, and Jumper 7 said he bumped his hand. Jumper 7 went over to find Jumper 3 (EMT) and saw that he was still treating the other injuries. Jumper 3 (EMT) quickly assessed the third injured Jumper (Jumper 7). He determined that that his injuries were lower priority as compared to the other two.

Jumper 3(EMT) felt confident that Jumper 6 was working with the jump plane to contact Dispatch and relay that an air ambulance was needed. Dispatch was notified of two injuries, one shoulder and one wrist. Dispatch asked for the nature of the injuries and was told one yellow, one red. An air ambulance and a helicopter with hoist capabilities were requested at this time. Dispatch asked for more details on the injuries and offered Air Attack, which the Jumpers accepted. Jumper 3 (EMT) was still gathering the medical information to pass along. To the Dispatchers, waiting for the injury information felt like a long time.

“Sometimes stuff happens, but hurting three Jumpers is just bizarre.”

Jumper 8 was still in the plane. Even after the second injury, he wasn’t nervous and wanted to jump, but the jump had been cancelled. After dropping medical equipment and paracargo, the jump plane remained on scene to coordinate airspace until the transition with Air Attack was able to take place. Once the transition was complete and all resources had communications, the jump plane exited the air space.



Figure 8. PLF examples.

Medical Response

Dispatch had contacted the air ambulance vendor to respond, asking for two helicopters, one with hoist capabilities. Another helicopter with short-haul capabilities responded from the Cove Fire. It was later cancelled. Ground resources were also dispatched, including the local Search and Rescue and a ground ambulance. The ground ambulance staged at a lower point down the mountain due to the terrain and road conditions. Search and Rescue continued up the mountain with a UTV to the site.

Everyone on scene took a role. Jumper 5 started marking the helispot. Jumper 6 took over talking to Dispatch, ensuring that two life flight helicopters were coming and that one had hoist capabilities.

Search and Rescue arrived at the jump spot on the UTV about the same time as the helicopters. One Jumper noted that he was amazed they got there so fast.

The first helicopter arrived and shut down; the second arrived a short time after, also shutting down. The medical personnel on board helped assess and “package” the injured Jumpers. Jumpers 4 and 7 flew in one helicopter and Jumper 1 in the second.

Initially Jumper 7 thought he was going to be transported via UTV since his injuries weren’t severe. Although he was not treated by the medical personnel on the air ambulance, they decided that it was best to keep all the injured Jumpers together. He ended up riding in the air ambulance with Jumper 4.

Jumper 4 knew that he needed to have surgery on his hand so he requested that the air ambulance take him to a hospital where the surgery could happen immediately. They all flew to Utah Valley Hospital in Provo, Utah.

Difference in perspectives on the medical evacuation –

Smokejumpers: “It felt like it was fast.”

“Dispatch had Life flight and ALS [advanced life support] all on scene in under an hour.”

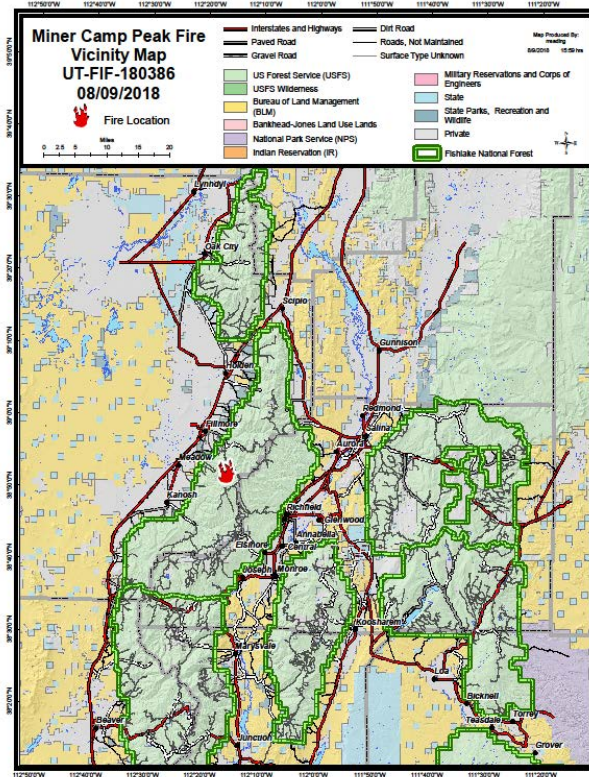
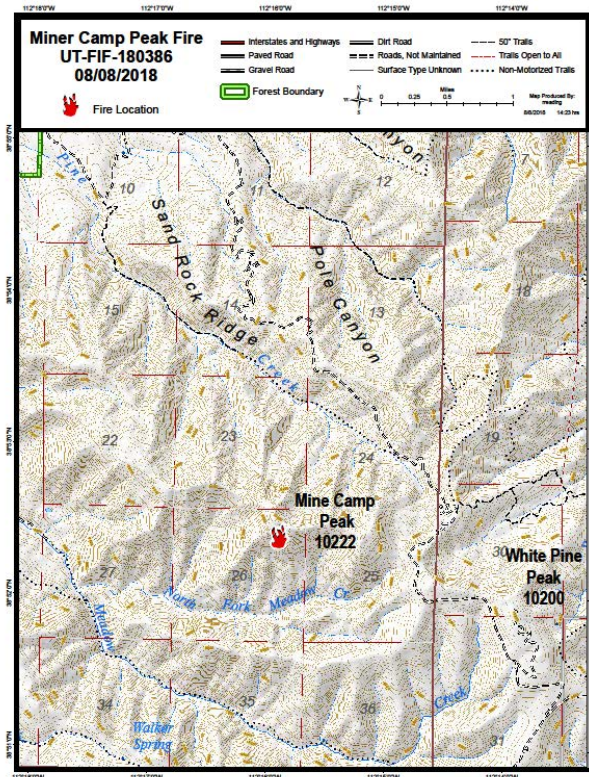
DO: “It took 45 minutes to get medivac to get to the site, if the injuries were more severe we could have had a different outcome.”

For your operation, how do you factor in medical evacuation times?

Decision Makers

By mid-June the Region began pre-positioning Advanced Agency Administrators (AA) on the southern forests of Utah due to a lack of local AA support. Fire activity across the Region was an early season concern. The Advanced AA near the Fishlake National Forest was assigned to a fire on the Manti-La-Sal National Forest by the end of June.

Does Planning Level 5 affect your strategy decisions?



The season progressed as expected and on July 27, 2018, the National Fire Preparedness Level (PL) went to the highest possible, 5, and the Great Basin Geographic Area Coordination Center (GACC) followed suit the next day.

On July 28 about 1930, the Duty Officer (DO), who was also the Forest Fire Management Officer (FMO), heard about the smoke report of a couple of trees on fire on Miner Camp Peak, Fillmore District. She knew the country as rugged, steep, and unforgiving. “This is not Type 2 crew ground,” she said. During a normal season, she would have given strong consideration to a monitoring strategy for this area. This season, at PL5 Nationally and expecting the same for the GACC, was outside of the norms. She knew available resources were already stretched thin from her work on the Type 3 Cove Fire on the Beaver District and the other three small fires on Forest. The Miner Camp Peak area would be a “logistical nightmare” if this fire grew.

Run cards, a set of standard responses to initially reported smokes, are used at the Richfield Dispatch Office. However, with the added complexity that comes with evening operations, Dispatchers rely on the experience and conversations with the DO to determine what resources to order. The DO’s first thought was to send in an initial attack Engine to the smoke. With the remote and rugged terrain, she knew that it would tie up those resources for a long time.

The Acting District Ranger got a text from the Engine Boss on District, notifying him of the fire. He, the Engine Boss, and the District Ranger (who was on a fire assignment himself) talked about what they wanted to do with

this fire. Taking into account the level of activity in the area and the potential for this fire, they decided to suppress it. The Engine Boss was relaying information to the DO.

Dispatch notified the DO that Smokejumpers were available. She quickly reassessed using an Engine and thought that Jumpers would be able to have a couple of folks take care of those few trees in a couple of hours. She told Dispatch to order the Jumpers and have them skip early morning physical training so that they could get to the fire early. "At night, in these conditions, it was a quick, easy decision for me," she recalled. The Dispatch log reflected the discussion that Dispatchers would see how the fire was doing in the morning and then order Rappellers or Jumpers.

About 1800 on July 29, the DO was in the planning meeting for the Cove Fire. She answered her phone to hear the news from Dispatch that two of the Jumpers were hurt and that air ambulances had been ordered. She quickly started notifying people. One of the first she told was the AA for the Cove Fire who was at the meeting with her. Among the many notifications she made were the Acting Fishlake National Forest Supervisor and the Fire Staff on the Payette National Forest who supervises the Smokejumpers. Although the Forest staff hadn't experienced a firefighter injury before, they quickly started working through their Medical Liaison plan to stage liaisons at both the Fillmore and Richfield hospitals. They found out later that the patients were being taken to Utah Valley Hospital and worked with Uinta-Wasatch-Cache National Forest to assign a Medical Liaison.

Can you put yourself in the position of the reinforcement resources (Jumpers and Rappellers) that came in the day after three injuries occurred?

What thoughts might go through your mind when you are preparing to jump into the same spot where three accidents occurred?

What factors may play a part in determining alternative jump spots?

The Acting Forest Supervisor had been in the position on the Fishlake

National Forest since late June. He had been on the Forest for nine years as the Forest's Public Services Staff Officer. Fire had been a bit of a learning curve for him with regards to AA roles and coordination with the FMO as he had no experience with AA duties prior to this season.

"You feel sick to your stomach when something like this happens."—Acting Forest Supervisor

His first knowledge of the incident was a phone call from the DO. He was called fairly early on and heard that two Jumpers were injured. This was the first he heard of the Miner Camp Peak Fire and that Jumpers were sent to

respond. He immediately began notifying additional folks. He also chose to reassign the AA from the Cove Fire to the Miner Camp Peak Fire and called in an outside AA for the Cove Fire.

When he heard about the accidents he felt terrible. "I was shaken up." The day following the accidents he was talking to the Incident Commander (IC) on the Miner Camp Peak Fire, one of the uninjured Jumpers who remained on the fire. He was astounded at the professionalism on the size-up and situation. The IC maintained such a clear head and stayed focused in spite of the injuries to his crew. He said it really "brought home to me how real and personal these folks on our fire lines are."

The Forest Supervisor on the Payette, the Jumpers' home Forest, also received notification of the injuries. He started adding up the Smokejumper injuries he'd seen this year and wondered aloud if there was a correlation. It was obvious that he has pride and appreciation for the skills, experience, and dedication of the Jumpers here in McCall. It just felt like this year had been such a tough one on the Jumpers.

The Next Day

On July 30, the Acting Fishlake Forest Supervisor, his DO, the AA for the Miner Camp Peak Fire, and the Acting Fillmore Ranger met concerning the fire. The agency representatives were struggling with the

lack of resources available if “this thing takes off.” With the input from the IC, they felt that they could contain it within a day or so with additional resources. The Jumpers on the fire talked about hiking in a crew versus using more Jumpers or Rappellers to contain the fire as quickly as possible. They believed they would reduce the exposure to additional firefighters by preventing the fire from growing. These conversations helped them make the decision to reinforce with Jumpers and Rappellers. Upon talking with the IC, it looked like fire activity was increasing.

The reinforcement Smokejumpers arrived on scene over the fire in the morning. The jump plane made two passes. One pass was made over the jump spot where the Jumpers were injured and another pass on a different jump site near the radio towers. They were aware of the injuries the previous day. They decided to jump the original spot. They threw streamers, saw no wind, and dropped two Jumpers with square parachutes. The reinforcements discussed the jump spot with the IC (original load) and was moved due to down air. Those Jumpers called the plane and relayed that there was down air on this spot and suggested they move to the alternate jump spot. Five more Jumpers landed at that site, all successful jumps.

Lessons Learned

These lessons were gleaned from the participants interviewed during the process:

- Prior to a jump, share the information in the IC kit (radio frequencies, maps, resource order, etc.) with more than one Jumper.
- Air Attack was extremely helpful during the incident, especially with communications between all aircraft.
- Having a dedicated frequency for medical incidents made communication effective.
- Having the ability to assign one Dispatcher to normal radio traffic while the other Dispatchers focused on the incident-within-an-incident limited confusion.
- Even when provided the tools (either through equipment or training), circumstances may arise that prevent an employee from using them in the right place or time. “Had the right tools; just needed to recognize them earlier.”—Jumper 7.
- Jumpers were familiar with the medical plan and had been extensively training, allowing quick execution.
- The professionalism between the Pilot and the Spotter created a positive environment despite having flown together only one time previously. They practiced good crew resource management.
- Forests should continue training for the possibility of injury in remote, difficult terrain. This includes extractions, procedures, and training for liaisons to care for employees.
- Factor extraction time into conversations around risk prior to sending in resources.

Events Timeline

07/28/2018

- 1931 – New Smoke Report: Miner Camp Peak: Resource Response: Air Attack
- 1943 – Location of fire determined
- 1947 – Duty Officer notified; will send an Engine in the morning
- 2021 – Kneeboard sent to GBCC requesting Jumpers
- 2043 – Duty Officer notified Dispatch of wish to send Smokejumpers to the fire in the morning

07/29/2018

- 0959 – Order placed in ROSS to GBCC
- 1002 – Order placed to NV-CNC in ROSS
- 1130 – (1030 PST) Smokejumper aircraft launched
- ~1330 – Aircraft landed in Fillmore, Utah (refueling aircraft)
- 1614 – Left Fillmore, Utah for Miner Camp Peak Fire
- 1620 – Arrived over Miner Camp Peak Fire
- 1629 – Determined location of the jump spot
- 1700 – Smokejumper operations completed
- ~1711 – Dispatch notified of Jumper injuries
- 1719 – Air Ambulance ordered: need hoist-capable ship
- 1725 – Ground ambulance follow-up to confirm location (requested earlier)
- 1733 – Condition of all three injured Jumpers relayed
- 1738 – Spotter confirmed a hoist-capable helicopter and basic air ambulances ordered; also requested agency helicopters if they are closer
- 1742 – Both air ambulance ships are up and are 45 minutes in route
- 1820 – Air ambulance arrived over the Miner Peak Fire
- 1824 – Air ambulance on the ground with second one holding
- 1824 – Search and rescue are on scene
- 1852 – Both air ambulances are off and headed to Utah Valley Hospital; 1930 ETA

7/31/2018

- 1600 – Miner Peak Fire contained

8/01/2018

- 1943 – Miner Peak Fire controlled

8/2/2018

- 1130 – Miner Peak Fire called out



Sensemaking

Learning from an incident requires a deep examination of our daily operations (normal work) as well as a better understanding of the many influences surrounding what we do and why. During this examination, strengths and weaknesses in our work system may emerge.

As the FLA team made sense of this incident, several systemic processes were identified that could benefit from further thought and conversation. Although the story does not indicate the subjects below had a significant impact on the accidents, they are issues worth discussing. This sensemaking section is intended to inspire all readers to make sense of this incident from their perspective.

Understanding “Stuff Happens”

When making sense of this individual incident where three Jumpers were injured on one jump, it may seem “unique,” “bizarre,” and unheard of. Part of the uniqueness is that there doesn’t seem to be one condition that explains all three injuries (i.e., wind, terrain, etc.). It makes us question what role “luck” plays or how probabilities and injury rates factor in. According to the Forest Service’s 2017 National Smokejumper Program Summary, the 25-year average injury rate is 0.65percent on fire-related jumps. This rate is very relevant to the risk trade-off decisions made when weighing the relative value of using Jumpers as opposed to other resources. If we were to place these three injuries in larger-scale context and looked across all Jumper injuries in 2018, would trends emerge? Could greater learning take place? Risk is inherent in everything we do. There is not a “no-risk option.” Our employees recognize the possibility that bad things can happen. In this incident, the Jumpers made a late afternoon jump when winds are often higher as compared to morning jumps when winds are often calmer. Jumpers are trained to jump in calm and windy conditions alike, and most importantly, they are trained to carefully assess the conditions before each jump regardless of time of day. They identify and manage risk to the best of their ability.

Was this jump something outside of the norm or did “stuff happen”?

Risk and Risk Trade-offs

Let’s place ourselves in the “shoes” of the Duty Officer. The intent for this fire was to suppress it as quickly as possible and as safely as possible while in PL5 conditions. Many things would play into such a decision, including time to the fire, risk to firefighters, and availability of resources. In this case, at PL5 nationally and in GACC, the local unit was engaged in the Cove Creek Fire and did not have a local helitack resource; this fire season (in July) was already well underway.

Does the decision to jump a fire with a road running through the middle of the jump spot make sense?

Are there other risk-risk trade-offs that may have gone into making the decision to jump this fire?

A long list of common potential issues coupled with personal experience will likely weigh into understanding this risk trade-off associated with sending people in a vehicle vs. via aircraft. Let’s think through some of the risk-risk trade-offs the Duty Officer may have considered while making the decision:

The DO initially considered sending an Engine but believed that they would commit their initial attack resource for a significant amount of time. If firefighters are asked to drive to the fire in remote, difficult terrain, the time to get to the fire is unknown. The state of road access can create more uncertainty, particularly in how close to the actual fire firefighters can get. Hike time can vary significantly. Engines typically run with three to four firefighters.

Once the DO heard that Jumpers were available, she ordered them instead of using the Engine. If Jumpers are

ordered, a specific timeline can be estimated—the flight time to the fire, plus 30 to 60 minutes for jump operations. District initial attack resources remain available for other starts. Jumpers typically bring eight firefighters to the incident. Those firefighters regularly train and work in remote and rugged terrain often considered too rugged for other firefighters. A risk-trade-off here takes into account the risk of Jumpers getting to the fire versus their ability to get to the fire quicker. This often means a smaller fire managed quickly and less firefighters exposed to risk in the long run. Also, since Jumpers are highly skilled in working in remote and rugged conditions, their risk in these environment is likely much less than that of local firefighters.

Air Ambulances

Let’s put ourselves in the “shoes” of the Jumpers who are helping with the medivac.

“We were not sure if the air ambulance could land in the jump spot, due to the slight slope of the spot. Ordering both a hoist-capable and a regular air ambulance made sense to make sure we got them out of there as soon as possible. Also, the Jumper who was in the process of looking for good landing zones was hiking to find one when I made the order for an air ambulance.”

Why ask for a hoist-capable air ambulance when there is a sizable jump spot?

What other things would you consider if your fellow firefighter was seriously injured and you needed to get that person out of the field as soon as possible?

Short-Haul

During the course of our interviews, individuals in Dispatch and leadership roles indicated they wished they had known more about the capabilities of

Is a short-haul ship the right tool for your evacuation needs?

a short-haul helicopter. Short-haul is a method of inserting or extracting personnel from a location using a helicopter. It is used where other methods of insertion or extraction are not feasible or available, such as in heavily timbered areas, steep slopes, or roadless terrain where landing an aircraft is not possible. The purpose of Emergency Medical Short-haul is to facilitate rapid and effective access to medical care in the field for critically injured or ill employees as well as extracting patients for transport

to definitive medical care. More information can be found on the [Forest Service Fire and Aviation Management Web site](#).⁶

Hospital Liaisons and Office of Workers’ Compensation Programs

Forest staff recounted that the local Hospital Liaison program worked well. However, because the air ambulance transported the employees to a different hospital, a liaison from a neighboring forest filled the role. This was the first time this individual had heard of the position (Hospital Liaison) and had received no training to perform these duties and was unfamiliar with the responsibilities of this role.

Do you know what a Hospital Liaison does?

How long is a reasonable wait for follow-up care?

During interviews with two of the three injured Jumpers, it was identified that there was delay in receiving follow-up care after the initial emergency room visit. One Jumper was instructed to seek care from both an orthopedic surgeon and a primary care physician within three to five days of his initial treatment. However, the individual had not been issued an Office of Workers’ Compensation (OWCP) authorization number to see a provider even after seven days.

⁶ Go to http://fsweb.wo.fs.fed.us/fire/fam/aviation/short_haul/index.htm.

The U.S. Department of Labor (DOL) OWCP is where Federal employees may file a claim for compensation if they incur a work-related injury or illness. As both employees and supervisors, it is important that we become well versed in our Agency’s OWCP process and clearly understand individual roles and responsibilities when an incident occurs. In addition, a current Hospital Liaison plan including clearly identified roles and responsibilities, knowing how to fill out the proper paperwork, pre-identified names and phone numbers, and a list of helpful resources may be beneficial in managing an incident.

More information is available at the [United States Department of Labor Division of Federal Employees’ Compensation \(DFEC\) Web site](https://www.dol.gov/owcp/dfec/regs/compliance/forms.htm)⁷ or the [DFEC CA-11 When Injured at Work Information Guide for Federal Employees](https://www.dol.gov/owcp/dfec/regs/compliance/ca-11.htm).⁸

Staffing

Backfilling positions can create difficulties in maintaining clear chain of command, communication, and tracking Agency Administrator qualifications. During this incident it looked like the following situation:

On the Fillmore District

The Fillmore Ranger was on fire assignment. He was physically on District but working nights on other fire operations. The District Fuels Specialist was Acting Fillmore District Ranger. The District Fire Management Officer was on a fire assignment. The Engine Captain was acting for the District Fire Management Officer.

In the Supervisor’s Office

The Acting Forest Supervisor was normally the Forest Public Services Staff Officer. There is no Deputy Forest Supervisor. The Forest Fire Management Officer (FMO) was also the Duty Officer. The Forest AFMO was on fire assignment. There were no Journey or Advanced Agency Administrators on Forest. The Working Agency Administrator assigned to this fire was a Range Specialist from the Richfield District.

Does the forest staffing on fire during this incident represent the new normal? If so, do we all recognize this dynamic system?

Are there additional considerations we should take during fire seasons to maintain alignment of Leader’s Intent?

The Water Cooler

The FLA team gathered the perspectives of three Jumpers who had remained on the fire for four days after the injured Jumpers had been taken to medical care (Jumpers 2, 3, and 6). During the phone interview with them it became clear that they had done an excellent job of sensemaking about the incident. They were incredibly articulate and prepared to share lessons learned; it was almost as if they had a polished narrative ready to share—conveniently handing the phone from one Jumper to another to share various portions of the story. Perhaps the four days these Jumpers spent together is an excellent example of the power of group sensemaking around “the water cooler” (or in this case, around the fire). Complex scientific research suggests that successful outcomes in some industries can be tied to taking time to make sense about work in groups. Spending time together during a fire and talking about the incident that happened with people you know and trust personally (another key to successful sensemaking) may lead to greater learning opportunities.

How can group sensemaking like these three Jumpers may have experienced be facilitated throughout our agency?

⁷ Go to <https://www.dol.gov/owcp/dfec/regs/compliance/forms.htm>.

⁸ Go to <https://www.dol.gov/owcp/dfec/regs/compliance/ca-11.htm>.

Closeout

A special thanks to the McCall Smokejumpers who were passionate about telling their stories, which was a tremendous help for us. The FLA team is very grateful for their contributions and support. It was greatly appreciated that extra time was taken to educate us in their operations and invite us to witness a live jump. The Jumpers were extremely accommodating and informative.

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