



Twisp River Fire Fatalities and Entrapments

Interagency Learning Review Status Report





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Purpose of the Status Report

On August 19, 2015, the Twisp River Fire (Twisp) in the State of Washington tragically cost the lives of U.S. Department of Agriculture, Forest Service firefighters Rick Wheeler, Andrew Zajac, and Tom Zbyszewski. The fire also severely injured another Forest Service firefighter and resulted in the injury of three other firefighters¹ working for the Washington Department of Natural Resources. As we started reviewing this event, it became apparent that more lives could have been lost.

The Forest Service, Okanogan County Fire District 6, and Washington Department of Natural Resources responded to Twisp in a combined effort to suppress the fire while simultaneously protecting several houses, which were believed to be threatened.

The outcome of this event generated an interagency response, and members of these agencies are now working together to produce a Learning Review. This review is intended to understand the event from multiple perspectives in order to develop insights that may reduce the chance of a similar entrapment event in the future. Because the final report will take many months to complete, we have decided to publish this Status Report.

The initial interagency review is in its early stages. We do not have all the information, and there will likely be aspects of what occurred on August 19 that we will never know. The process has already shown that there are things that we can learn as a community. Most of these represent opportunities to learn that cannot be addressed through simple fixes alone. We are obligated to reflect on the events of that day and begin to ask ourselves questions that challenge how we organize to meet the complexities of wildland fire operations. The things that we learn from this reflection may indicate the need for a shift in our interagency firefighting culture. Research has shown that reflection and honest inquiry are integral steps in any cultural change.

This Status Report is designed to share what we know at this stage of the review and to explain the process we are using. It introduces the Learning Review, which was adopted by the Forest Service in 2013, to guide the study of serious accidents. This report presents an abridged narrative designed to show the complex nature of Twisp (the full narrative is being developed and will be released with the final report). The Status Report will also provide a brief description of the next steps.

As we study this and other incidents, it is important to relate what we do know to the larger scope of operations and the work environment so that we can proactively collaborate to create systemic improvements.

The information in the narrative contained in this Status Report is preliminary; information is still emerging regarding the events surrounding the incident.

¹ One of these employees was a contract dozer operator.

Twisp and the System of Wildland Firefighting

At the Twisp River Fire (Twisp), conditions came together in an adverse and unintended outcome. Our preliminary work on the Twisp review has found that firefighters and agency administrators face many of the same influencing factors throughout the system of wildland fire operations. While similar factors exist on other fires, the outcomes have been very different. Because we are dedicated to prevention, we have to consider whether conditions within the agencies represent vulnerabilities in our organizational approach to wildland fire, opportunities to improve our greater firefighting system, or a combination of both.

There is a deep need after any fatality event to understand what happened so that everything possible can be done to prevent another occurrence. Prevention is not as easy as learning what people should or should not have done at a specific incident. It requires a thorough examination of the system that put people in positions where they felt that their actions were the best option. Between 1910 and 2014² the wildland firefighting community lost 1,075 firefighters. This unacceptable loss forces us to reflect on our processes and system of work.

We have a process to evaluate actions and decisions to determine if malicious intent caused the accident. The Coordinated Response Protocol (CRP) begins with a Law Enforcement review to determine if any illegal actions contributed to the outcome. Any indication of illegal activity will initiate a full Law Enforcement investigation. In the case of the Twisp River accident, the Forest Service Law Enforcement investigation is ongoing but has not revealed any indication of criminal activity or malicious intent.

A fundamental premise of the Learning Review (LR) process is that our people are well intended and are doing the best they can in a complex work environment. We recognize mistakes and errors are normal aspects of the human condition and represent opportunities to learn. As Professor James Reason wrote, “We cannot change the human condition, but we can change the conditions under which humans work.” The LR is designed to facilitate learning as much as possible from the event and to reveal the influences or context that shape actions and decisions—why the actions and decisions made sense to those involved. It is also designed to look beyond the incident and to compare what occurred to what we might consider ‘normal work’ so we can begin to understand the systemic influences on actions and decisions.

The LR involves a number of critical elements. First it guides us to create a complex narrative by capturing the stories that surrounded the accident. Then we work to identify key actions and decisions, which commonly represent learning moments. To learn from actions and decisions, we have to understand their context. This is where we begin to connect the influences with decisions and actions. We call upon fire specialists within the agencies (subject-matter experts), who can help us determine if the conditions were unique

² This total number of fatalities does not include off-duty deaths.

to Twisp or if they are prevalent throughout normal operations. We also bring in specialists from academic and professional organizations outside the fire suppression communities. Outsiders bring fresh eyes and a different perspective on how our system works. These perspectives help us to question our assumptions, what we are learning, and the conclusions we form during reviews. By incorporating external specialists we have an opportunity to recognize and overcome our biases and to challenge our cultural norms. On the basis of our analysis and a variety of other perspectives, we then offer meaningful recommendations for improvement in our approach to wildland fire and for prevention of accidents.

The LR is designed to recognize that safety is created in multiple places and through multiple methods in any organization; in other words, there are many contributors to the creation and maintenance of a safe work environment. For this reason our organizational response to incidents and accidents includes multiple learning products designed for a range of audiences from the field to top leadership. In order to improve our wildland fire response system, we all have to take the time to reflect and learn from the event.

Accidents are much more than problems to be solved. They are moments in time that reflect networks whose interactions and influences must be mapped and understood. The LR process is not designed to judge individual actions or decisions as good or bad. Instead, it is specifically designed to learn everything possible from the event by looking at it through multiple lenses, or perspectives, to determine if the observed interactions are widespread in normal work. This examination may result in small changes to process or equipment, or it could lead to an agency-wide review and change, such as a shift in organizational culture. We have learned that in order to create relevant cultural change, we have to start by recognizing opportunities and encouraging dialogue and sensemaking across organizational levels.

Twisp River Fire - Abridged Narrative

Learning Review Team Perspective

All of us in the wildland fire community want to understand what happened at Twisp River on August 19, 2015. We want to know what the members of our extended wildland fire family experienced that day, and most importantly, we want to learn from the tragic events so that we can prevent a similar event from occurring in the future. Unfortunately, the story behind the events is not an easy one to tell. How and why Rick Wheeler, Andrew Zajac, Tom Zbyszewski, and several other people found themselves in the position they did is incredibly complex. The narrative we share here is intended to answer some of the basic questions that we all have about what happened that fateful day on the Twisp River Fire (Twisp). As members of the Learning Review (LR) team, we want to be transparent, honest, and open about where we are in the learning process and acknowledge that more questions are emerging as we begin to make sense of the event.

This status report represents an early assessment of what we are learning. We have to keep in mind that many things remain unclear. We have produced this status report that represents key aspects of the event and points to a number of areas that we can further explore in Phase 3 of the Learning Review (see “Next Steps” at the end of this report). All of the details that we uncover will be shared in the final Learning Review, which will be available on the [Wildland Fire Lessons Learned Web site](#).³

As you read this abridged story of Twisp, you may feel like the lens through which you are reading is fuzzy and that details are missing. It may seem as though you are looking down on the incident from 30,000 feet above the ground. You should feel this way. We all feel this way. We are still focusing the lens through which we look.

It is important for readers to know certain facts in advance: The entire incident that we describe below happened in three to four hours. The fire more than doubled in size in approximately 15 minutes. Three Forest Service (FS) fatalities and one critical injury occurred on Engine 642. Two Washington Department of Natural Resources (DNR) employees and a contract dozer operator were also entrapped in the fire but survived with minor injuries; all three sought refuge in a garage and then later deployed their fire shelters. Several other engines encountered severe fire conditions. All the firefighters engaged in operations at Twisp were exposed to the trauma associated with the fatalities.

What follows is an abridged narrative of the Twisp incident.

³ Go to www.wildfirelessons.net.

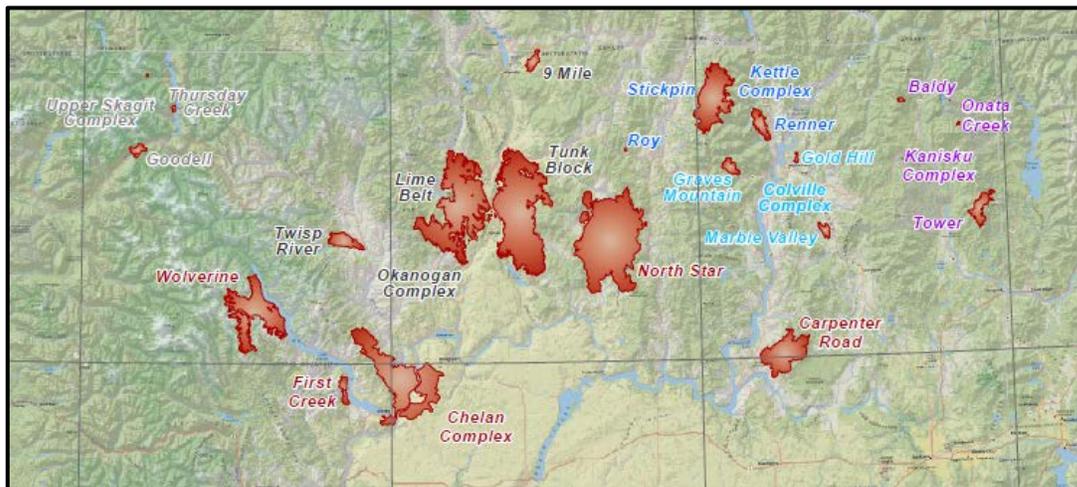


Figure 1—Location of large fires near the Twisp River Fire.

Twisp River Fire, August 19, 2015

It was fire season near Twisp, Washington, and August 19, 2015 was a day much like those that preceded it. It was incredibly hot and dry. Experts in climate, weather, and fuels classified the area as being in “extreme drought.” The local interagency dispatch centers were very busy. There were several very large fires in the area (Figure 1), as well as many small fires that resulted from earlier lightning storms. The Twisp River Fire (Twisp) started about five miles west of the town of Twisp. About 20 homes were scattered throughout the area near where the fire started.

Fires in the Twisp area commonly burn across different land management and firefighting jurisdictions. Twisp started on land in the vicinity of mixed protection areas and eventually burned onto private, state, and federal land. As a result, multiple agencies were responsible for managing the fire. The Washington Department of Natural Resources (DNR), Okanogan County Fire District 6 (FD6), and the U.S. Department of Agriculture, Forest Service (FS) ultimately sent resources to help fight the fire.

Twisp became a complex incident as soon as multiple agencies were dispatched to this fire in the wildland-urban interface. More complex and longer duration fires are commonly called Type 2 and Type 1. These types of fires are staffed with pre-established teams, whose members know each other’s roles and responsibilities. Smaller and less complex initial attack fires (Type 4 and 5) are not staffed with these pre-established organizational support teams. Type 1 or 2 organizations typically have command positions including logistics, operations, finance, and planning, and staff positions such as safety, information, and liaison.

According to common firefighting practice, all three agencies involved (FS, DNR, and FD6) provided an incident commander (IC) to manage Twisp (two of which were Incident Commander Type 3 qualified). The Forest Service also provided an ICT3 (Incident Commander Type 3 trainee). It is normal practice to have trainees work with qualified fire line positions. In fact, this is a key component of the wildland fire training system. The three different agencies all have slightly different training programs, radio frequencies, and agency cultures.

The ICT3 position serves as the bridge or transition point from Type 5 or 4 fires (which are not managed by teams) to Type 2 or 1 fires (which are always managed by teams). Type 3 ICs often find themselves in situations where they are asked to coordinate fires that are increasing in complexity while a Type 2 or Type 1 team can be assembled and mobilized to take over management of the fire. In some instances, ICT3s are surrounded by a predetermined team of people who regularly work together and have a clear division of responsibilities. In other instances, they are ordered through the dispatch system as a standalone IC who takes charge of an incident. It is not unusual for these standalone ICs to use leadership from available suppression resources (such as engines and crews) to help out with the planning, operational, and logistical demands. This was the way that the “points of contact” referenced later in the narrative were staffed at Twisp.

When fires spread across jurisdictions (such as when Twisp burned across private, state, and federal land), the responding agencies often create a “unified command structure” in which representatives from each agency join together to make decisions. This unified command often requires extra time for coordination of resources and to build a shared mental picture of what is occurring on the fire. Each agency involved in a unified command structure sends its available resources to assist, such that the response becomes an interagency operation. During Twisp, the three ICs and one ICT3 trainee from the different agencies entered into unified command in response to a very complex fire.

Adding to the complex nature of the emerging fire organization, these ICs had to negotiate extreme drought conditions in an area where structures were threatened while building a team from the resources that were on scene. They were also dealing with the challenge of working with three different dispatch centers (two interagency wildland fire dispatch centers and one 911 dispatch center) that had dispatched resources to this fire.

Standard fire operating procedures in this area of Washington State require local dispatch centers work together to provide the three ICs with as many resources as they could so that the ICs could “catch the fire” as quickly as possible.

These ICs were expected to manage the following interagency resources from various agencies:

- 3 structure (Type 1) engines
- 2 medium (Type 3) structure/wildland fire engines
- 9 light (Type 6) wildland fire engines

- 2 water tenders
- 2 FD6 division chiefs
- 2 dozers with crew (a crew of 2 for 1 dozer; a crew of 3 for the other dozer)
- 1 hand crew (16 people)
- 1 4-person helitack crew
- 1 light helicopter
- 2 medium helicopters (one did not arrive on scene until after the entrapment)
- 1 heavy helicopter
- 1 air attack (to provide eyes over the fire)
- 3 heavy air tankers (carrying retardant)
- 1 lead plane (to help guide the retardant tanker)

As the complexity of the incident increased, the ICs realized that they needed to establish an ad hoc command structure. They identified two engine bosses and assigned them as “points of contact” to help with fire suppression oversight and to establish a manageable span of control for the ICs.

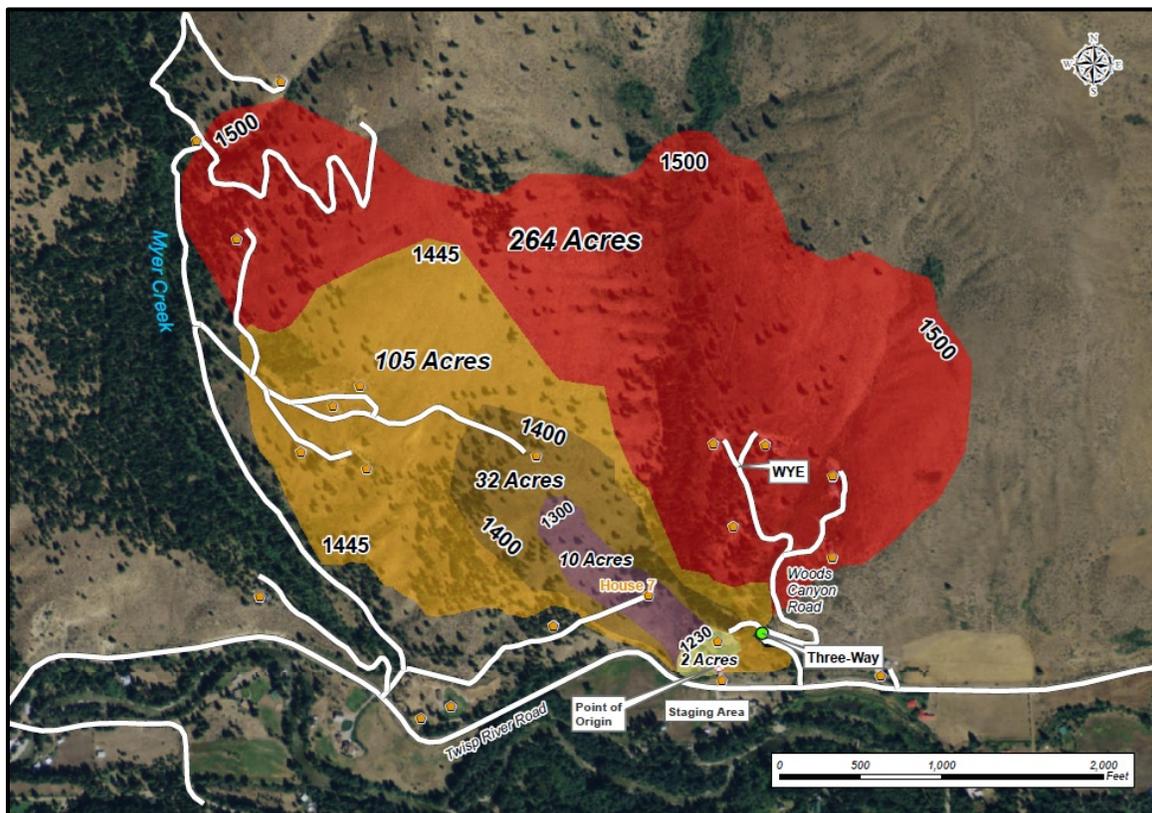


Figure 2—Estimated progression map from 12:30 p.m. to 3:00 p.m. (1500) of the Twisp River Fire on August 19, 2015.

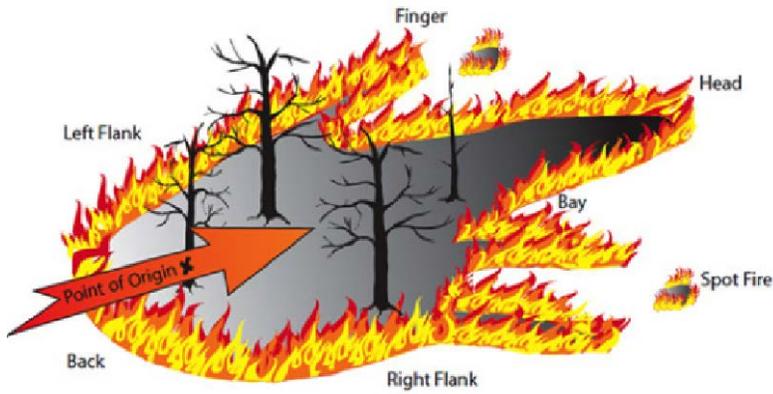


Figure 3—Depiction of parts of fire with common terms.

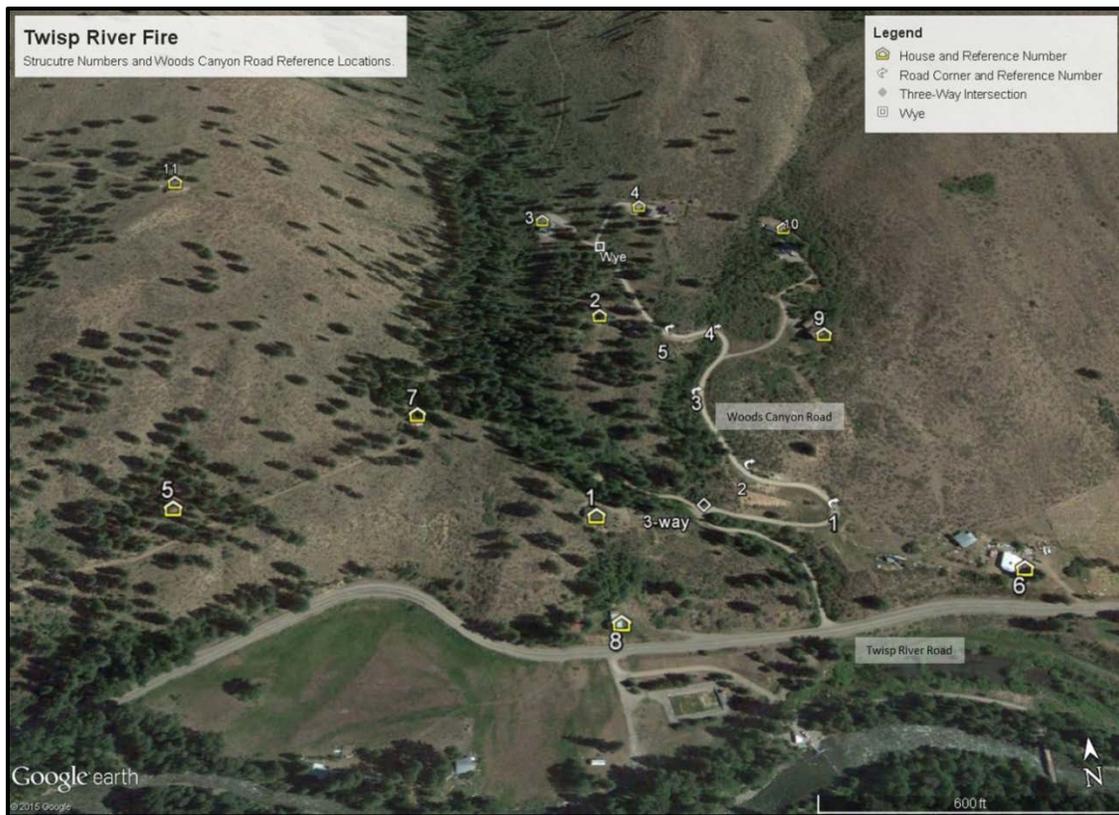


Figure 4—Area map with vegetation; staging area is below house 8 (Google Earth map).

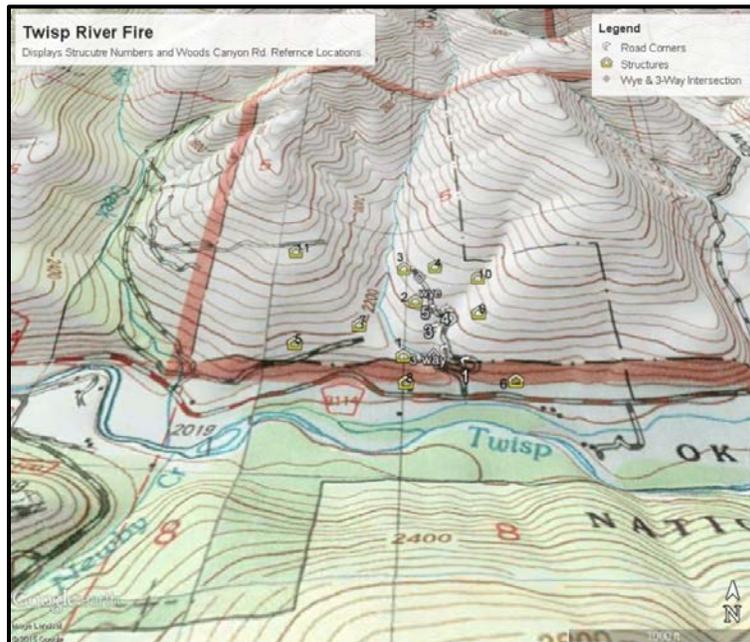


Figure 5—Topographic map of the area around the Twisp River Fire.

The first firefighters on scene stated they saw three- to four-foot flame lengths at the head of the fire. The fire was terrain driven; the wind was light out of the southeast; and the fire was roughly two to three acres in size. As the fire progressed, the fire on the left side burned more quickly. This rate of spread was mainly due to the uphill slope on the left side (Figure 5, Figure 3). Within four hours, the fire had spread dramatically over the area. Figure 2 shows that the fire more than doubled in size in approximately 15 minutes.

The FD6 IC was the first to reach the scene. As he was driving he caught site of the fire from about a mile and a half away. He knew the area and told his resources to stay down near the highway and deploy at the back (or heel) of the fire. When he got on scene, he drove up the fairly steep, winding Woods Canyon Road and told residents in the structures along the road to evacuate. He established a staging area along Twisp River Road at the back (or heel) of the fire to brief incoming resources (Figure 4). He was worried that he would not be able to get additional resources because of all the surrounding fire activity (Figure 1).

The ICs arrived at different times within the first hour and a half of the initial dispatch. As these and other resources met at the staging area, it was determined that the FS ICT3 would take the lead under the unified command structure (see Page 8 Resources List). The fire leadership⁴ met and discussed a tactical plan to fight the fire and ordered heavy air tankers for retardant application.

The fire had started in an area covered by two interagency wildland fire dispatch centers. Resources arrived on scene with different repeater frequencies loaded in their radios. After

⁴ Fire leadership at this point consisted of the FD6 IC, FS ICT3, and FS ICT3 trainee; the DNR ICT3 was not yet on scene.

the location of the fire was plotted, this frequency confusion had to be sorted out. As the ICs organized to fight the fire, they began ensuring that the many resources they were leading had the correct frequencies programmed into their radios so everyone could communicate effectively (no reprogramming was necessary).

Some resources on the fire had access to the general fire zone forecast read over the radio that morning. Several firefighters were reassigned from other fires in the area where they had received a more locally

specific fire weather forecast for the Chelan Complex, which was located about 40 miles away from Twisp. This localized forecast predicted a wind shift between 3 and 5 p.m. The ICs did not have access to this forecast. Other firefighters who had that information may have discounted the weather information based on their individual experience with perceived weather forecast inaccuracies in that area.

The fire had grown to about 10 acres and had a defined head and flanks. The FD6 IC, the FS ICT3, and the FS ICT3 trainee met and developed a plan. They observed three- or four-foot flame lengths at the head of the fire and about two-foot flame lengths on the flanks. The FS ICT3 and trainee discussed engaging the fire up Woods Canyon Road. The FD6 IC was feeling more comfortable moving up off of the highway now because the head of the fire had burned away from the Woods Canyon Road area; the right side was less active; and he trusted the expertise of the FS ICT3s.

The initial tactical plan that the ICs agreed on was a standard one. Their objectives were to protect life first, then property. The firefighters would “anchor and flank the fire, going direct.” This means that the firefighters would start at the safe, already burned area at the heel of the fire and work their way around the fire, staying as close to the black (burned) area as possible. The fire was divided into a right side or flank and a left side. “Points of contact”⁵ were identified as the leaders for each side (flank) of the fire and given resources to employ to suppress the fire. There were structures threatened on both sides of the fire.

Firefighters on the left side of the fire began using three helicopters (heavy, medium, and light) to make water drops. Another medium helicopter had been ordered and was still in

Dispatch held the departure of the fixed-wing aerial resources (tankers and lead plane) at the airport until the air attack reported on scene. Ground resources and air attack were unaware that the fixed-wing resources were being held. When air attack arrived over the fire, the pilot noticed a lot of up-air—more than he had ever experienced before. He later wondered if the up-air he experienced was a precursor to the extreme fire behavior event to come.

⁵ “Point of contact” is the term used on the fire to describe personnel who assumed duties similar in nature to those of a Division/Group Supervisor (DIVS). DIVS is not a required position on Type 3 fires. The fact that firefighters recognized this need is further indication of how complex this fire was becoming.

route to the fire. The engines were deployed near the heel of the fire looking for spot fires and cooling things down along the fire's edge near Twisp River Road (Figure 4). The hand crew, two engine crews, and helitack crew were constructing direct line from the anchor point along the left side. One of the DNR engines drove up Twisp River Road to house 5 to see if they could protect it. Resources were committed to establishing and holding an anchor point along Twisp River Road.

Meanwhile the right side was being scouted and assessed. This side of the fire was less active than the left. Some engines began to scout the structures along Woods Canyon Road, a dead-end, one-lane dirt road (see Figure 4). One firefighter was dedicated to direct helicopter bucket drops to help with structure protection.

Resources on both the right and left sides of the fire were still trying to ensure that their radios were programmed with the correct frequencies so that they would all be able to communicate with each other. No adequate procedure exists to resolve this issue; crews adapted in real time to find a functional solution.



Figure 6—Photo taken at 1:09 p.m. looking northwest on Twisp River Road. The house in the lower left corner is House 6 in figure 4. (Photo courtesy of Marcy Stamper, Methow Valley News)

The firefighters assigned to the right flank conducted a briefing at the three-way intersection (Figure 4). They discussed LCES (Lookouts, Communications, Escape routes, Safety zones). The firefighters determined that “they would each be their own lookout,” identified their communication frequency, and agreed that their escape route would be back down the road to the staging area (safety zone).

They also discussed the predicted wind shift “at 3:00 p.m.” At the conclusion of this briefing, they agreed that the “point of contact” would go up Woods Canyon Road to assess what was above the three-way intersection. He was conducting his initial recon and was not aware that the FD6 had already evacuated the residents. Almost as soon as he began hiking, he realized how far the road went up the canyon and called for Rick Wheeler to drive him up the road in Engine 642. They scouted for potential dozer line, triaged houses, and checked to see if any residents were still in the area. The rest of the crew from Engine 642 remained in the three-way intersection area with firefighters from the other FS engine.

The DNR dozer group arrived on scene and began scouting for a place to put in dozer line. The group traveled cross-country on the right side, bypassing the three-way intersection, and found a bench that looked like a good place to put in dozer line. The dozer started constructing line from the Woods Canyon Road along a flat bench below house 2 and planned to connect the dozer line up to the driveway at house 3. In the process they tied in with the “point of contact” without realizing who he was or where he was in the hierarchy. They discussed the option of putting the dozer line right on the fire’s edge (direct attack) but instead decided to stay on the bench (indirect attack) because they did not want to cross a drainage between the bench and the fire (Figure 2).

The “point of contact” decided that he did not want any engines besides Engine 642 on the Woods Canyon Road until the dozer finished building line between houses 2 and 3. The remaining firefighters on that side of the fire concentrated their efforts on the lower portion of Woods Canyon Road, watching for spot fires and securing the anchor. The firefighter who was working with the helicopter doing water drops was surprised when the helicopter he was working near the three-way with did not return with another bucket; he was unaware that the helicopter had left the fire to refuel.

After initially scouting the structures on the right flank, the “point of contact” called for three more firefighters to help Rick with structure protection at house 2. The “point of contact” continued scouting on foot. Rick left house 2 in Engine 642 and drove down to pick up the three firefighters and bring them to house 2. The reconfigured engine crew consisted of Rick, Andrew Zajac, Tom Zbyszewski, and another firefighter. They drove to house 2, parked the engine, and started structure protection operations.

The right side “point of contact” asked for two engines that were in the staging area to come up Woods Canyon Road to help with structure protection. Plans were changing rapidly, and the coordination of resources was becoming more complex. New resources had arrived, and organizational conditions were changing. After consulting the FD6 IC and agreeing on a tactical plan to engage in structure protection, the FS ICT3 offered an additional FD6 engine, bringing the total number of engines to four on Woods Canyon Road. The “point of contact” accepted the offer and briefed the FD6 engine crew shortly before they began structure protection at house 3.

Meanwhile on the left side of the fire, some of the firefighters noticed the smoke column shift from leaning over their flank of the fire to standing straight up. They also noted that

the wind had changed direction. The engines continued to work on putting out spot fires and noticed the work got slightly easier. The left flank “point of contact” recalled:

“Around 1445 I looked up and saw Air Attack and thought, ‘That’s weird.’ I felt little wind and there was a forecasted wind [shift] out of the west that morning. We talked about it at some point in the day, so a lightbulb went off that this was probably the wind switch. I stood there and watched. My flank of fire had calmed down and was no longer the priority. I noticed the smoke starting to blow the other way; [it] wasn’t cranking, but I got the feeling things [were] changing.”

The “point of contact” for the left side called the “point of contact” for the right side and told him that he could have the air resources because it was beginning to look as if the right side of the fire was getting more intense fire behavior. Air attack was not aware that there were ground resources on the right side of the fire up Woods Canyon Road but did realize that the priority was shifting to the right side. Smoke also made it extremely difficult for aerial resources to be of use on the right side.

The dozer continued constructing line between houses 2 and 3 and was close to tying in to house 3 when fire burned up to the dozer line below house 2. One of the dozer crew members saw ash starting to fall, which he inferred to mean the wind had shifted above him; despite the observed two-foot flame lengths he recognized the potential for a change in fire behavior. He gave orders for the other two dozer group members to get to house 3 as quickly as possible.

As the right side “point of contact” was briefing an additional incoming engine at the “Y” (referred to as “Wye” on maps, Figure 4), the fire behavior drastically increased. The wind had shifted and increased speed. Correspondingly, extreme fire behavior was observed, which astounded even the most experienced firefighters at Twisp. Several firefighters reported the winds seemed more like a “strong breeze” than a heavy wind, adding to the surprising nature of the increased fire behavior.

One firefighter in the area saw the Engine 642 crew members scramble to get into their truck. He watched them drive up the road in the opposite direction of their safety zone. He noted there were 60-foot flame lengths and could feel the heat as the fire licked over house 2 moments after Engine 642 left. This firefighter, who was in his ninth year of firefighting in the local area, stated, “I have never seen fire move this fast.”

The right side “point of contact” saw Engine 642 driving up to him, so he whistled and swung his hand over his head, indicating they needed to turn around and get out. The “point of contact” yelled, “RTO! [Reverse tool order!],” meaning that all crews needed to follow their escape route back down the road to the safety zone. Engine 642 turned around in the road and was the first engine to head toward the escape route. One of the other 3 engines turned around at the “Y,” and another engine drove up to house 4 to turn around. The fourth engine remained at house 3.

As Engine 642 drove down toward the safety zone, the road was completely obscured by smoke. The engine jolted and dropped down as if a tire had popped. They kept driving downhill, but they had zero visibility, and the engine went off the road. The engine came to a stop, and the surviving firefighter got out and was immediately engulfed in flames. He went through the flames and made his way to the road.

The surviving engine crews said they had never seen or heard anything like the fire behavior they experienced. They could not hear anything due to the deafening noise, which one firefighter described as, “like a giant TV tuned to static and turned up full blast.” As one engine recounted their retreat to safety, “the smoke conditions were black as night, and at one point fire was over the top of the engine.”

The “point of contact” was on foot heading down the road with his hand on his fire shelter, contemplating deploying it, when the engine that turned around at house 4 stopped and yanked him into their engine. Once in the engine, the “point of contact” radioed, “Emergency traffic! Road compromised! Need aerial support!” The “point of contact” contacted firefighters back at the staging area to find out about the location of his resources and was told that Engine 642 was not there. During this period of evacuation the radio traffic was incredibly busy; too many firefighters were trying to use the radio at the same time for anyone to communicate effectively.

Further up Woods Canyon Road at house 3, the dozer group saw fire licking around the side of the house. The dozer operator still inside the open-cab dozer was not overly concerned and thought the crew could ride out the fire near the house. Soon, the cab of the dozer became too hot to stay in. The operator shut down the dozer but did not take his fire shelter because it was attached with a bungee cord to the dozer cage, and he did not think he would need it.

The three dozer crewmembers initially huddled between the garage and the dozer, but as it got hotter they pried open the roll-up garage door and went into the garage. Eventually they realized the structure was on fire, and it began getting hot in the garage. They called on the radio for the engine nearest to them to spray water on the garage, but they did not receive a response. They could not hear anything on the radio due to the deafening noise.

The engine crew at house 3 used most of its water to cool down the advancing fire; they targeted the house, dozer, and a small group of trees near the house. The engine crewmembers could no longer see the dozer crew, and in fear for their own lives, headed down the escape route. It was incredibly hot and smoky inside the cab of the engine, and they had to make their way down the road in “little chunks,” waiting for visibility to improve and the temperatures to cool down enough to continue driving.

The dozer crew had chosen to ride it out in the garage and did not feel abandoned by the engine that left the scene. Eventually, the three recognized that the garage was on the verge of collapse, so they opened the garage door and moved behind the dozer to shield themselves from the heat. It was immediately apparent that this was not enough

protection, so they moved quickly to the “Y” to deploy their fire shelters. The three men fit into two shelters (Figure 7).



Figure 7—A depiction of how the dozer group was oriented while in the two shelters. The remnants of house 3 and dozer are in the background of the photo.

Things were happening rapidly and nearly simultaneously as the fire grew.

Another firefighter who had escaped the fire blow-up on foot reached “switchback 1.” He heard his name being screamed and someone yelling, “We need help up there! Please, we need help!” As he got closer, he realized the person yelling was one of the crewmembers from Engine 642. He was severely burned, had taken off his yellow shirt, and was no longer wearing a hardhat. Together the two firefighters ran down the road to meet with the engines near the “3-way,” which were staffed by paramedics. After ensuring that the burned firefighter was receiving treatment from an Emergency Medical Technician Paramedic (EMTP), the uninjured firefighter ran down and alerted the FS ICT3 of the injury. The burn victim was evacuated from the fire in an ambulance and then flown via helicopter to Seattle’s Harborview Medical Center burn unit.

On the left flank of the fire, resources began hearing that someone had been burned. The left side “point of contact” decided to suspend operations. At 3:08 p.m. the FS ICT3 ordered all resources to disengage from the fire and head to the staging area.

The ICs alerted dispatch that they had an entrapment on the right flank of the fire. At 3:09 p.m. the lead plane began directing retardant drops; first a C-130 split its load into two drops, and next a DC-10 dropped four loads. Finally a P2V dropped two more loads. At least one of the drops reduced the heat felt by the dozer crewmembers in their fire shelters.

Most of the air resources left the fire thinking that no one was seriously injured. There was a huge sigh of relief when the dozer group stated that no more retardant was needed in the entrapment area. Most of the resources on the fire thought disaster had been averted. It was not until the pilots landed that they found out there were fatalities on Twisp.

Back at the staging area, resources realized that Engine 642 had not made contact after the fire blew up. The FS ICT3, the right side “point of contact,” and another experienced firefighter headed up Woods Canyon Road in a pickup truck to find the dozer group and look for Engine 642. At the “Y,” they saw a fire shelter and watched the three members of the dozer group come out of their shelters. While taking the dozer group down the road for medical care, the FS ICT3 noticed what appeared to be skid marks leading off the road, near “switchback 3” (Figure 4). They saw Engine 642 off the road with the rear door on the driver’s side wide open. The engine was still burning and the area was all black. The FS ICT3 continued to take the dozer group down the road to seek medical care while the “point of contact” and the other firefighter stayed at the engine to assess the scene. They confirmed that there were three fatalities.

A Type 1 incident management team was ordered, and shortly after that an evacuation was ordered for the towns of Twisp and Winthrop. The sheriff, a coroner, and a deputy arrived at the scene, and the FS ICT3 escorted them up the road to Engine 642.

One of the DNR engines cooled the area around Engine 642. Although emotionally affected, the FS ICT3 stayed on the fire to act as leadership and to transition to another ICT3 to manage resources at the fire until the Type 1 team could take over. The FS ICT3 trainee was tasked with caring for the other firefighters and getting them home, as there were many extremely traumatized people on the fire. The FS ICT3 acknowledged the emotional impact this incident had had on him, and although he made it clear that he wanted to transition with another IC, he was not relieved until 9:30 p.m.



Figure 8—A photo of the post fire scene (paved road is Twisp River Road and the dirt road is Woods Canyon Road).

Questions to Initiate Dialogue

Like us, you certainly have unanswered questions about this incident. We do not know all the answers to the questions we are facing, and some questions may never be answered. This report is designed to provide readers with the best current information and to inspire reflection. We hope that this status report gives you the opportunity to examine some of the practices that we in the wildland firefighting community consider “normal.”

The decisions and actions at Twisp appear to be part of normal work operations for our firefighters. We ask that you (the reader) make every effort to avoid finding fault in the decisions or actions that others made. We have blamed in the past and it has not led to prevention. Instead please focus your attention on the larger system that put these members of our firefighting community in this position. This examination of our system is what the Learning Review team will be undertaking over the next several months. We will be considering questions like the following as we start our sensemaking process.

- How do we fight fires differently if there are structures in the area? Should we as an organization and as a nation reconsider our objectives, strategies, and tactics in the wildland-urban interface?
- How and to what extent does the current firefighting system place ICT3 incident commanders in a position to be successful? What framework/processes/norms are inhibiting ICT3s from being successful? What framework/processes/norms are currently facilitating the success of ICT3s and how do we build on those?
- How might we enable ICT3s to work together to develop shared leadership in complex situations so that we are better able to adapt to and mitigate risk?
- How and when should firefighters communicate what they are going to do, how they are going to do it, and why? Who needs to be communicating about key issues before, during, and after a fire event?
- How did the weather prediction intended for another incident in another location affect decisions made on the Twisp River Fire? How can we share information that we receive during a fire event so that we can make sense of it and decide whether it is relevant or not?
- How do you incorporate risk in your decisions?
- In what ways are the fire operations at the Twisp River Fire common to firefighting operations that you have been part of (do they represent normal work)?

Learning Review Process

We have to begin any learning-based study by recognizing that our employees intend to create successful outcomes and avoid accidents. Understanding incidents or accidents may lead to technical fixes (such as improvement to equipment or development of a new rule). Those will be enacted as quickly as they are identified. However, technical aspects of the incident rarely address the deeper social factors. For this reason we want to look beyond this incident to determine if there are widespread or systemic influences that we can identify and for which we can develop strategies to change. The Learning Review process is designed to help guide our understanding and to shape ways to affect meaningful change.

The Learning Review is divided into four phases.

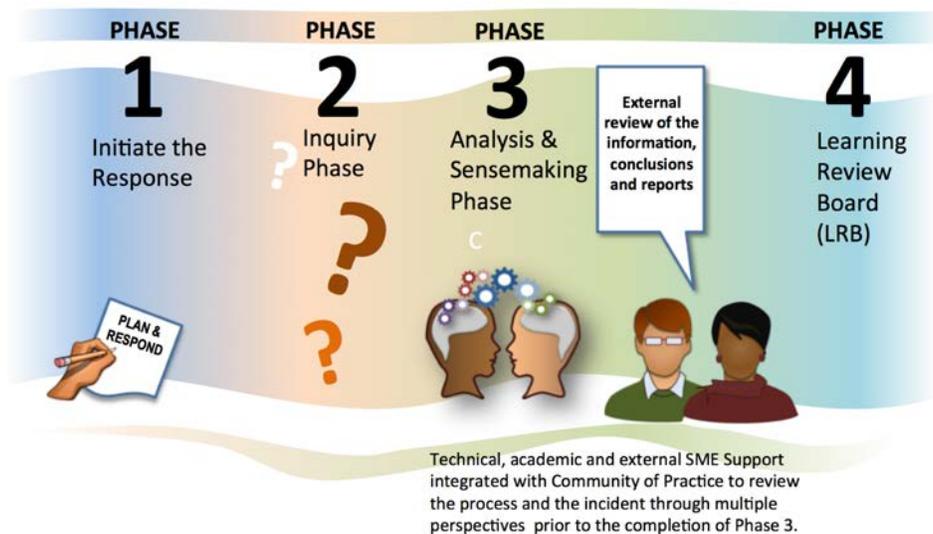


Figure 9—The four phases of the Learning Review.

Phase 1—Initial Response to the Accident: The Learning Review team is selected and dispatched through the Coordinated Response Protocol.

Phase 2—Information Collection Phase: During this phase, information is collected from a number of on-scene and off-scene sources. The interviews of the principal people involved add to an ever-growing understanding of the complex interactions that took place before and during the event. The result of this section is the creation of a narrative that attempts to capture the various perspectives of those involved. These perspectives are not resolved into a single story; rather they are each described in the narrative to help understand how different perspectives were, or were not, recognized and communicated during the event. The team then identifies key decisions and actions. Decisions and actions do not stand alone; they occur in the context of other aspects of the environment, which we call conditions or influences. We focus considerable attention on capturing the conditions that may have influenced the decisions and actions.

Prior to completing the narrative it is shared with the principal individuals involved in the incident to ensure that their perspectives are captured.

If the information gathered in Phase 2 suggests the need for a technical report to describe things like equipment malfunctions or failures, this will be initiated.

Phase 3—Sensemaking and Analysis Phase: During Phase 3, the LR team humbly recognizes that it can create a better product by asking for help from experts both inside and outside the organization. Using the narrative and conditions of influence, the team will first ask members of the community of practitioners (people who do, or have done, similar work as those involved in the incident) to help to build a more thorough understanding of the conditions that exist in the organization. This allows the process to look beyond the incident, and the focus shifts to understanding the influence and role of the culture and climate of the organization in the accident being reviewed. The team will research similar events from Forest Service and other agency history, looking for commonalities. This will help identify system-wide opportunities to improve.

Often people within an organization are so immersed in the dominant culture, or have biases, that make it difficult for them to see their own cultural pressures or organizational frailties. For this reason, outside experts are included in the review process. These experts are academic and industry specialists who are asked to critically review the information and the organization from their perspective. These external subject-matter experts will provide an important outside perspective.

Technical analyses will also be completed during this phase. This part of the review can examine equipment, information delivery systems, training systems, transportation systems, or any technical aspect of the incident and will point out needed corrections or fixes. This information may result in a separate technical report or chapter or appendix in the final report to the organizational leadership. The final report will be available to the public.

All the information collected will be presented in a draft report, which includes the suggested recommendations. These recommendations will be vetted through additional focus groups consisting of specialists in field operations, organizational leadership, and outside experts. This represents a form of quality control designed to ensure that the recommendations are meaningful and can be implemented (even if they represent long-term investments in change).

This work represents an examination of the system from multiple internal and external perspectives. Consulting our internal experts ensures that our workforce is represented and consulted in all phases of the process. External subject-matter experts provide a balanced approach that may force us to look critically at ourselves and our processes. The information is used to create recommendations regarding system-wide improvements to all aspects of the operation, including the upstream management of risk, preparation of our personnel at multiple levels, organizational weaknesses, and technical improvements.

Phase 4—Agency Review and Approval Phase: The Learning Review Board (LRB) consists of voting and non-voting members of the agencies. Voting members are agency senior-level managers and leaders. Non-voting members are program directors who will be influenced by the recommendations or who oversee safety programs, members of the team that created the report, union representative(s), and subject-matter experts as required. The LRB will be presented with the report in advance of the meeting. A presentation of critical information will be presented to the LRB, normally led by the Response Leader and the Team Leader. The LRB will review the report and recommendations and determine if additional work is necessary. Once the report and Safety Action Plan (recommendations) are accepted, then the report will be made available to the field and the public.

Next Steps

Twisp River Learning Review Phase 3

As we move into Phase 3, questions will arise that were not addressed in the narrative. As these issues are resolved, additional detail will be added to the full narrative. This expansive narrative will serve as corroborating information for any conclusions drawn during Phase 3 or presented in Phase 4. The full narrative will be released with any other learning products when the process is complete.

We are now engaged in Phase 3 of the Twisp River Fire Fatalities and Entrapment Learning Review. The LR team will use the narrative and conditions of influence (derived from interviews, on-scene inspection, review of participants' background, assessment of work/task loads, fire behavior, information available to crews and leadership, and any other relevant information) to build a thorough understanding of the event from the perspectives of those involved. As described in Phase 3 (above), this becomes the starting point for a thorough examination of the system and how it can be improved.

In order to look beyond the incident, the team will present the narratives and conditions that influenced decisions and actions to a variety of specialists. We will start this process by creating focus groups made up of subject-matter experts who have a deep understanding of the kind of work that was being done at Twisp when this accident occurred. The initial focus groups will first engage engine captains and their assistants, ICT3s, heavy equipment bosses, hand crew supervisors, dispatchers, aerial supervision people (air attack and lead plane pilots), fire management officers, predictive services people, and organizational leaders (line officers).

The information received from each focus group will inform the next in a growing understanding of the actions leading up to the accident and the influences that made those actions make sense to those involved at the time. The focus groups will also explore if the conditions are widespread throughout the organization or if they were unique to Twisp.

The narrative will not be changed by these discussions; however, the list of conditions of influence will be added to or reduced as the focus groups enhance the existing body of knowledge around the incident. This process helps the team to build a more extensive map of the pressures associated with normal work—what it is like to be placed in a situation like Twisp. A large part of mapping the pressures of normal work comes from understanding what our people face in the performance of their duties. This mapping effort will inform us regarding how well we prepare, communicate, train, and equip our personnel to complete their missions.

The team will take this information to outside specialists. These professors or industry professionals provide different perspectives, or lenses, that will help us to evaluate the information collected by the team. We have already selected professors who conduct research in policy, training, communication, adult education, team building, and system

complexity to review the Twisp River information. Viewing the information through these different lenses will help the agencies to look critically at our operations.

This outside view is very important; outsiders commonly ask questions about aspects of our daily work and culture that we may not think to ask ourselves or even see. Additionally, these outside perspectives are informed by years of research that would not otherwise be available to a traditional “investigation” team. This becomes a critical review of what we have learned and informs the next part of Phase 3, the development of recommendations. Research has shown that the knowledge resides throughout the communities of practice (the workforce and leadership). Therefore, we will involve cross-sections of the organization and academic or other professional specialists in focus groups to help shape recommendations that emerge from a Learning Review.

Twisp River Learning Review Phase 4

Phase 4 is the presentation of reports, recommendations for field learning products (or presentation of field learning products if they are completed), and recommendations for systemic improvements to the leadership of the organization. The Twisp River Fire is the first time the Learning Review has been applied to an interagency accident. As a result, the Learning Review Board will include members of both the Forest Service and the Washington Department of Natural Resources.