



Event Type: Near Miss from Increased Fire Behavior

Date: July 29, 2021

Location: Dark Ravine, Dixie Fire East Zone
Plumas National Forest

The Story—and Lessons—from Strike Team 49C's Experience in the Dark Ravine

*"Drop your packs and tools, grab your fire shelters and run up here!
There's clean air up here!"*

Crewmember Jesse

Brief Background

The Dixie Fire started on July 13, 2021 on the Plumas National Forest. Due to its size, complexity, and land ownership, it was "zoned" in order to better manage all resources. The West Zone was being managed by CALFIRE and the East Zone was being managed by the California Incident Management Team 2.

On July 29, Strike Team 49C was assigned to their second operational shift to mop-up "a piece of dirt" on Division November on the Dixie Fire's East Zone. Strike Team 49C consisted of five Type 3 Engines from four different city agencies (local fire departments) staffed by the California Office of Emergency Services (California OES). The experience level of these Strike Team members ranged from a qualified Strike Team Leader (STEN), a STEN Trainee, Company Captains, and former hotshots, to firefighters who were seeing fire for the first time in timber fuel types.

Mop-Up and First Weather Alert on Division November

After mopping-up for most of the morning, the Strike Team broke for lunch at mid-day. At roughly the same time, the Captains started receiving texts from the Strike Team Leader Trainee [STEN(t)] instructing them to gather-up and move to a neighboring Division to help a hotshot crew with a spot fire. Company Captain Parker remembers thinking: *"We were having fun mopping-up in the forest because where we're from, you don't mop-up. The fire goes out once it passes."*

The Strike Team Leader and Trainee led Strike Team 49C through a maze of old logging roads to Drop Point (DP) 121 near the emerging spot fire. The Strike Team Leader was briefed over the radio by Division and told to tie-in above the spot fire in the Dark Ravine, a deep canyon located on the fire's north side. A Heavy Equipment Boss (HEQB) Skyler, Dozer 1 and Dozer 2, and the Shasta Lake Hotshot Crew were all working in the canyon.

While in route to the Drop Point, the first Fire Weather Alert was broadcast on Command warning firefighters of potential outflow winds from approaching thunderstorms.

Engaging with the Hotshots

The Shasta Lake Hotshots, who had intended to go direct, split their crew into two groups to work downhill along each flank of the spot fire, which turned out to be a finger off of the main fire. The dozers were working to enlarge a pumping platform about a quarter mile from DP 125 to enable the incoming engines to start a hose lay. The plan was for one engine to pump the hose lay, while the other four engines would make the hour-long roundtrip ferrying water from the dam. The remainder of Strike Team 49C would don hosepacks and start down the hill to support the hotshot crew with the hose lay.

About three lengths of hose from the pumping platform, Company Captain Logan from one of the engines split the main trunk line with a wye and sent firefighters with hose packs down the fire's left and right flanks. Initially, the focus was on the left flank, which was being worked by Dozer 1 and a module from the Shasta Lake Hotshots, who were building "direct" fireline. Company Captain Parker and crewmembers Justice and Denver, worked across the left flank slope dropping hose, hoseline tees, and nozzles along the way.

Second Fire Weather Alert Announced

As the dozer line turned downhill, Dozer 1, who had been in the Dark Ravine the day before with HEQB Skyler, stopped because the ground was too flinty and steep to continue. Parker and another Shasta Lake Hotshot Squad Boss considered the situation as the second Fire Weather Alert was broadcast on Command with the same warning of outflow winds from thunderstorms and an increase in west winds, but it was on an adjacent Division and moving in their direction. The Squad Boss remarked to Parker: *“Good for us, sucks for them,”* as the wind was favorable on their west flank of the fire, but not on the east flank across from them.

Tying into the Creek Bottom

Company Captain Logan met crew members Jesse and Merrill at the wye. They hiked down the fire’s right flank to scout progress on the dozer line and to tie-in with the other Shasta Lake Hotshot squad. Below them, Dozer 2 moved down into the Dark Ravine and pushed fire line to almost the dry creek bed.

Above them, Strike Team members drug hose, “gamed out” pressure issues with the wyes, and installed lateral lines. At the bottom, as the dozer line turned to handline in the steeper creek bottom, Logan found additional hotshots in orange hardhats putting in a handline.

“What happened to Shasta Lake in the blue hardhats?” he wondered. *“Is there another shot crew I hadn’t heard about?”* It was the Mendocino Hotshots, who had worked the main fire from the west and put in handline through the creek bottom to tie-in with the dozer line. Although Logan didn’t know Mendocino would be down there, they were all glad to see them.

Shift Change and Transition to What?

Unable to push dozer line to the creek bottom on the left flank, the Strike Team Leader and Shasta Lake Hotshot Superintendent decided to abandon it and focus efforts on the right flank. Company Captain Parker and his crew working with the Shasta Hotshots also started to help on the other side. Parker thought: *“I’m entering the ‘sucks for them’ ground”*—referring to the Shasta Squad Boss’s remark from earlier. When Parker asked the Strike Team Leader Trainee about safety zones, he was told: *“There’s one in the creek bottom, and there’s always the black.”*

With the amount of hose needed on the right flank, Parker’s crew knew they needed to retrieve the abandoned hose to help plumb this flank. At the same time, the Shasta Lake Hotshots started hiking out the dozer line to end their shift. HEQB Skyler and the two dozers also headed out to end their shift, per the Division’s briefing over the radio. Around this time, the Mendocino Hotshots also started hiking out from the bottom of the creek. Strike Team 49C, who was on a 24-hour shift, did not leave the Dark Ravine with either of them.

At the bottom of the creek, Company Captain Logan discussed tactics with a Mendocino Hotshot Squad Boss. The members of Strike Team 49C continued to the bottom as they installed the hoselay. Company Captains Parker and Logan talked with the Mendocino Squad Boss and decided not to extinguish the creeping surface fire as it blackened the dozer and handline and to save water for flareups and more intense heat that may threaten the line.

Once the hoselay was charged, Logan and his two crewmembers started back up the hill to tie-in with the Strike Team Leader Trainee and discuss what the rest of the shift would bring. Logan told Parker that he’d let him know what the plan was.



Dozer line plumbed near the bottom of the Dark Ravine.

Third Weather Alert and Elevated Fire Behavior

As the Mendocino Hotshots started their hike out, their Squad Boss told Parker: *"We wouldn't spend the night here."* Parker recalls: *"I didn't like hearing that from Mendocino. We still had the rest of our 24-hour shift. There's no safety zone in the creek bottom and I didn't like the black either. It hadn't burned clean. The black wasn't a safety zone."*

Company Captain Logan hiked to the pumping platform to trouble-shoot a radio issue with their engineer. The engineer reported that as they left for the day, the Shasta Lake Hotshots helped put out a spot fire near the pumping site. Logan then heard the third Fire Weather Alert at 1807. Unlike the previous two weather alerts, this broadcast included "increased winds associated with passing thunderstorms." In addition, increased wind immediately materialized in the Dark Ravine from the west, increasing the fire behavior and smoke next to Strike Team 49C.

Radio traffic on Command was then overrun with the increased activity on adjacent Divisions due to this passing front. The Strike Team Leader, acting as lookout at the wye, noticed an increase in smoke and began to consider the distance to safety zones and Temporary Refuge Areas (TRAs). [A Temporary Refuge Area (TRA) is a preplanned area where firefighters can immediately take refuge for temporary shelter and short-term relief in the event that emergency egress to an established safety zone is compromised.]

The Strike Team Leader could not transmit on Command due to the increased traffic, but tried to relay to Division Oscar that the Strike Team was going to pull out of the Dark Ravine.

Company Captain Logan and his two crewmembers, Jesse and Merrill, noticed the fire behavior had significantly increased and picked up the pace of their hike up the hill. Jesse, who was encouraging Merrill, wanted to ensure that Merrill got up the hill safely. They noticed that the Mendocino Hotshots were behind them. Jesse kept telling Merrill: *"Hike faster. Mendo is catching us. We're going to beat the hotshots up the hill!"*

Passing the wye, Andy, one of the Company Captains, continued to the pump site as Company Captain Logan's crewmembers paused to let the hotshots go by. The fire behavior continued to increase, with burning snags sending ember wash across the line below Jesse. Jesse was concerned about the Strike Team 49C members because the fire activity that he was seeing would have cut off their egress. However, as they stood there, a Mendocino Hotshot crewmember took the time to disappear into the green to relieve his bowels. *"How bad can it be if a hotshot is stopping to take a sh*t?"* Jesse thought, feeling a little better about their situation. After the hotshots passed by, Jesse and Merrill continued to the pump site.

At the pump site, three unassigned dozers arrived looking for their HEQB. Company Captain Logan quickly asked them to improve the line around the pump site by *"pushing it out a bit more."* They felt better with the "big yellow machines" pushing dirt around them. At this time, it occurred to Andy and his crewmembers: *"We need to slow the tempo down to account for timber conditions."* Because they were used to working in grass components and on structural fires, it made sense that they slow down in the timber to ensure they were safely using proper tactics.

Strike Team 49C had approached this assignment like they were doing structure protection back home, where they engage in well-practiced tactics in familiar fuels. Company Captain Logan thought: *"We need to slow down a bit, brief out a bit more, confirm safety zones and escape routes, analyze the whole thing some more. Base all actions on current and expected fire behavior, right?"*

As the Strike Team Leader observed the collective fire behavior and weather, he and the Strike Team Leader Trainee decided to bring the remaining 12 Strike Team 49C members up from the bottom of the creek.

Time to Get Out of the Dark Ravine

At the creek bottom, the Mendocino Hotshots had already started their hike up to DP 125. Company Captain Parker asked Justice, a former hotshot, what he thought about the situation and if he thought they should also leave. Justice was slow to answer. He didn't like the increased torching, embers blowing across the line, and the lack of a plan. New to a municipal fire department, Justice appreciated the procedural approach to urban fire tactics. Justice was conflicted because he wanted to show respect for his Captain's rank and follow his instructions, but his experience as a hotshot was telling him that they should leave.

As they became more concerned with the increased fire behavior, Parker kept pressing Justice for an answer. After more silence, Parker shouted: *"Answer me! What do you think we should do?"*

At that moment, Justice thought to himself, *"We should have gotten face-to-face briefings, we should have reviewed the downhill checklist, we should have confirmed real safety zones and not these stupid TRAs. But here we are."* However, he knew that he should say this out loud to his Company Captain.

As Parker was waiting for Justice to answer, a radio call came in from the Strike Team Leader, instructing them to move up the dozer line "double time" and return to the pumping site. Parker thought: *"Double time? What does that mean? If it's an emergency, say so. Clear the channel for emergency traffic and make it real."*

The Strike Team Leader told Parker to leave the hose packs and hose. At that moment, Parker noticed Justice dumping the excess drinking water to ditch the weight in his pack. Parker did the same, leaving just enough in his camelback to get up the hill.

Parker started to lead the crew up the dozer line, which was a tough hike out for many on Strike Team 49C. Parker asked Justice and Denver, both strong hikers, to bring up the rear to help push their crewmembers up the hill.

Instead, Justice chose to lead from the front, knowing he could lead them out of the poor situation that they were in. This also imparted a sense of urgency to the others. Parker later recalled: *"Jesse is stubborn. I'm glad he did that. It got us up the hill faster."* Parker was convinced that Justice's decisions saved their lives and was grateful that he did not follow the original plan.

Although the Strike Team members are in excellent shape, the hike out was tough. They were breathing smoke and hearing the fire pulse in the interior of the finger, as isolated torching gave way to group torching. They chased Justice up the dozer line, snotty nosed and stinging eyes, with each breath of air becoming more difficult. Parker reflected later: *"I told my legs to run, but they wouldn't listen."*

The Crew Ditches their Packs to Make a Run for It

Approximately halfway up the hill, Justice broke into clean air. But those crewmembers who were located behind Parker were in thicker smoke and feeling the heat of the fire burning toward the dozer line. Parker paused to catch his breath, looked down the line, and saw some of the crewmembers and another Captain struggling to make the climb.

Justice yelled down the line: *"Drop your packs and tools, grab your fire shelters and run up here! There's clean air up here!"* He then thought to himself: *"I think I can make it out with my pack, but screw it. If I'm even thinking about dropping my pack, I probably should. I just got married a month ago. I care more about my wife than the pride of not dropping my pack."*

Justice dropped his pack and tool, grabbed his shelter, and continued up the hill. Parker and the rest of the crewmembers did the same, making better time without the extra weight. The fire bumped the dozer line hard. It was not clear if fire was established in the green, but there was plenty of ember wash and lots of smoke blowing across the line.

Without the load, Parker's legs propelled him up the hill toward Justice and out of the smoke, heat, and blowing embers.

Crews Pile into the Engines for Shelter and Transport

At the pump site, Company Captain Logan and his crew had loaded their gear into their engine when Justice, Parker, Denver and the rest of the lower Strike Team members burst through a small patch of green and into the large clearing,



Line gear left on the dozer line as Strike Team 49C left the Dark Ravine.



Hose line cut by Andy when Strike Team 49C left the pump site at the Dark Ravine.

many with just their shelters in hand. Logan recalls: *“There were some wide-eyed guys in that last group. You could tell they were scared.”*

The sense of urgency in some had evolved into panic. One crewmember was determined to run out of the pump site, even as the Strike Team was loading in the other vehicles. The Strike Team Leader recalled: *“I had to lock a guy in my truck so he wouldn’t take off on foot. I had to make sure he wouldn’t drive off in my rig.”*

In the rush to leave the pumping site, Logan cut the hose off the back of the engine without discharging the line or shutting the valves. *“I was cutting the charged hose off the back of the engine! If you ever have to cut a charged line off the back of your engine, remember to do it from uphill. I didn’t and got soaked.”*

Next, someone yelled at Parker: *“Get in a rig, it’s time to go, go, go!”* Parker crammed himself into the back of Logan’s engine as they shoved people in wherever they could. Firefighters were sitting on each other’s lap trying to fit everyone somewhere. As they were leaving the pumping platform, Logan remembers: *“We were checking on our crews, who was in which rig, making sure everyone was accounted for. Parker was doing the same and he was in my engine.”*

Initially, they drove toward DP 125. But the Strike Team Leader had sized-up 49C’s emotional well-being and decided that they needed to tie-in with a Division Supervisor at the larger DP 175 at the dam. On the logging roads, they encountered the other three engines who’d been shuttling water and transferred the crammed crewmembers into the empty seats in their engines.

The Strike Team Leader had a “face-to-face” meeting at the dam with Night Division to convey what had happened and inform that they were going into camp. Although Night Division initially wanted them to stay for their shift, they quickly realized what Strike Team 49C had just endured, and contacted the Incident Command Post to inform them of this update.

‘Parade’ at ICP

At ICP, the Safety Officer (SOF) and Operations (OPS) received word from Branch V and Line Safety, with initial reports ranging from potential “entrapment” to “deployment” to “near miss.”

For OPS and SOF, the “near miss” with Strike Team 49C felt like a “Murphy’s Law” situation considering all of the fire growth, and threats to highways and communities caused by the passing thunderstorms. In an abundance of caution, the Incident Management Team greeted Strike Team 49C with medical attention and a stress management evaluation.

As Strike Team 49C entered ICP they thought they were in a “parade”. IMT members and EMTs (Emergency Medical Technicians) lined-up to check them out and assess for any injuries. The Strike Team Leader briefed the Safety Officer and others. They discussed the need for a Critical Incident Stress Management (CISM) session and scheduled one for the next day.

“We’d done a quick AAR at that big field near the dam on the way out,” one crewmember remembered. “But it was the CISM where it had become obvious how bad it was for that last bunch coming up the hill.”

The Texas Canyon Hotshot Superintendent led the CISM session. The following day, Strike Team 49C joined this hotshot crew on a piece of line to support a tactical burnout operation. Two members on Strike Team 49C chose to demob and return home.

Within a few days, the Dixie Fire made several major weather-driven runs, burned through small communities, and at approximately 500,000 acres, became one of the largest fires in California history.

“The transition that night was like an S-520 inject, multiple Divisions had blown out, we were looking at closing the highway again, it was extremely active.”

Night Ops

Strike Team 49C Lessons

1. Don't make assumptions about how other agencies and cooperators work; have intentional conversations about topics that might save your life. Cultural differences will always be around. It's our responsibility for everyone to recognize and work through those differences when working together.

a. Acknowledge that language use and terms may differ and collaborate accordingly. For example, it's widely known that "Safety Zones" and "Temporary Refuge Areas (TRAs)" are defined differently for different agencies. It's unlikely that a singular answer will emerge to "fix" this difference anytime soon. This means that it will be up to people "on the ground" to slow down the operational tempo and ask follow-up questions when these types of terms are being used.

b. Be ready to defer to expertise, in the moment. For example, when Justice recognized that he had the necessary experience to lead the crew out of the Dark Ravine, he stepped-up and led. This was important when he moved to the front to set the pace, but it was especially important when he made the decision for the crew to drop their packs and run.

c. Be ready to assess and brief your resources based on the IRPG. Gathering information from the IAP may not be enough information to fully understand the capabilities and limitations of incoming resources.

2. Be aware and remind others of radio communication "watch-out" situations.

a. Perceived repetition of messages coming over the radio can desensitize us to important information. For example, multiple weather reports of increased fire activity, increased winds, etc., may start to sound the same over the course of a day. Realize that this might make it more challenging to pick out messages telling you that the "thunderstorm is in your direct vicinity," which might influence your immediate tactics.

b. When radio traffic is busy because of other immediate concerns, it may be harder to determine if a critical situation is "worth" reporting. In the case of Strike Team 49C, the crew didn't need any specific assistance to make it up the hill, but others on the unit could have been prepared to help them when they arrived at DP 125 if they would have known what they were going through.

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