

BLOWUP: WHAT WENT WRONG AT STORM KING MOUNTAIN

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ANALYZE VISUALS

How would you feel if you were photographing this scene?

The main thing Brad Haugh remembers about his escape was the thunderous sound of his own heart. It was beating two hundred times a minute, and by the time he and the two smoke jumpers¹ running with him had crested a steep ridge in Colorado, everyone behind them was dead.

Their coworkers on the slope at their backs had been overrun by flames that Haugh guessed were three hundred feet high. The fire raced a quarter mile up the mountain in about two minutes, hitting speeds of eighteen miles an hour.

Tools dropped in its path were completely incinerated. Temperatures reached two thousand degrees—hot enough to melt gold or fire clay.

10 “The fire blew up behind a little ridge below me,” Haugh said later. “People were yelling into their radios, ‘Run! Run! Run!’ I was roughly one hundred and fifty feet from the top of the hill, and the fire got there in ten or twelve seconds. I made it over the top and just tumbled and rolled down the other side, and when I turned around, there was just this incredible wall of flame.”

Haugh was one of forty-nine fire fighters caught in a wildfire that stunned the nation with its swiftness and its fury. Fourteen elite fire fighters perished on a spine of Storm King Mountain, seven miles west of Glenwood Springs, Colorado. They died on a steep, rocky slope in a fire initially so small that the crews had not taken it seriously. They died while cars passed within sight on
20 the interstate below and people in the valley aimed their camcorders at the fire from garage roofs.

There were many other fire fighters on Storm King when Brad Haugh crested the ridge, yet he feared that he and the two men with him were the only ones on the mountain left alive. That thought—not the flames—caused him to panic. He ran blindly and nearly knocked himself unconscious against a tree. Fires were spotting all around him as the front of the flames chased him. The roar was deafening; “a tornado on fire” was how he later described it. The light, he remembered, was a weird blood-red that fascinated him even as he ran.

1. **smoke jumpers:** people who fight forest fires by parachuting to remote locations. Once on the ground, they carry heavy supplies on their backs and hike over rough terrain.

The two smoke jumpers with him were Eric Hipke and Kevin Erickson.
 30 Hipke had been so badly burned the flesh was hanging off his hands in strips. Haugh paused briefly to collect himself, then led the two men about a hundred yards down the mountain, stopping only long enough to wrap Hipke's hands in wet T-shirts. As they started down again, the fire was spreading behind them at a thousand acres an hour, oak, pinyon, and juniper spontaneously combusting² in the heat. "I didn't have any nightmares about it later," said Haugh. "But I did keep waking up in the night very disoriented. . . ."

The South Canyon fire, as it was called, ignited on Saturday, July 2, as a lightning strike in the steep hills outside Glenwood Springs. At first 40 people paid it little mind because dry lightning had already triggered thirty or forty fires across the drought-plagued state that day; another wisp of smoke was no big deal. But this blaze continued to grow, prompting the Bureau of Land Management³ (BLM) district office in Grand Junction to dispatch a seven-member crew on the morning of July 5 to prepare a helicopter landing site, designated H-1, and start cutting a fire line along a ridge of Storm King. At this point the blaze was cooking slowly through the sparse pinyon and juniper covering the steep drainage below. Glenwood Springs was visible to the east, and a pricey development called Canyon Creek Estates was a mile to the west. Interstate 70 followed the Colorado River one thousand feet
 50 below, and occasionally the fire fighters could see rafters in brightly colored life jackets bumping through the rapids.

The BLM crew worked all day, until chain-saw problems forced them to hike down to make repairs. Replacing them were eight smoke jumpers from Idaho and Montana (eight more would be added the next morning) who parachuted onto the ridgetop to continue cutting fire line. They worked until midnight and then claimed a few hours' sleep on the rocky ground.

Just before dawn, on the morning of July 6, Incident Commander Butch Blanco led the BLM crew back up the steep slope. Arriving at the top, Blanco discussed strategy with the smoke jumper in charge, Don Mackey. At about the
 60 same time, the BLM office in Grand Junction dispatched one additional crew to the fire, the twenty-member Prineville Hotshots, a crack interagency unit from Oregon whose helmet emblem is a coyote dancing over orange flame.

The smoke jumpers had cleared another landing spot, H-2, on the main ridge, and around twelve-thirty in the afternoon, a transport helicopter settled onto it. The first **contingent** of the Prineville crew ran through the rotor wash and crouched behind rocks as the chopper lifted off to pick up the rest of the unit from below. They'd been chosen alphabetically for the first flight in: Beck, Bickett, Blecha, Brinkley, Dunbar, Hagen, Holtby, Johnson, and Kelso. Rather

NARRATIVE NONFICTION

What does Junger focus on in this seven-paragraph introduction? Why might he have chosen to begin his nonfiction narrative this way?

b TAKE NOTES

Reread lines 38–51. What is Junger able to convey through a shift back in time? Note events on your timeline.

contingent (kEn-tGnPjEnt) *n.* a gathering of people representative of a larger group

2. **spontaneously combusting:** self-igniting through an internal chemical action.

3. **Bureau of Land Management:** an agency within the U.S. Department of the Interior, in charge of sustaining the health, diversity, and productivity of public lands.

ugly little creeper,” the BLM’s Brad Haugh said of the early stages of the fire. Every summer, fire fighters like Haugh put out thousands of blazes like this one all over Colorado; at this point there was no reason to think South Canyon would be any different.

The second half of the Prineville crew dropped onto H-2 around 3:00 P.M. and began widening the primary fire line. Two hundred feet below, Haugh was clearing brush with his chain saw on a 33 percent slope. That meant the ground rose one foot for every yard climbed, roughly the steepness of a sand dune. The grade near the top was closer to 50 percent. He wore bulky Kevlar
90 sawyer’s chaps and a rucksack loaded with two gallons of water weighing fifteen pounds, a folding knife, freeze-dried rations, and some toilet articles. He also carried a folding fire shelter and a Stihl 056 chain saw that weighed ten or twelve pounds. Even loaded down as he was, Haugh could probably have reached the ridgetop in less than one minute if he had pushed it, and H-1 in five or ten minutes. Wildfires rarely spread faster than one or two miles an hour, and the vast majority of fire fighters are never compelled to outrun them—much less fight to survive them. By conventional fire evaluation standards, Haugh was considered safe.

About three-thirty Haugh took his second break of the day. It was so hot he
100 had already consumed a gallon of the water he carried. The fire was burning slowly in the drainage floor, and the crews fighting it—nine from the Prineville unit and twelve smoke jumpers—were several hundred feet below him in thick Gambel oak, some of the most flammable wood in the West.

Around 3:50 Haugh and his swamper—a sawyer’s helper who flings the cut brush off the fire line—were finishing their break when their crew boss announced they were pulling out. Winds were picking up from a cold front that had moved in a half hour earlier, and the fire was snapping to life. They were ordered to climb to the ridgetop and wait it out. ■

It’s rare for an entire mountainside to ignite suddenly, but it’s not unheard
110 of. If you stand near H-2 and look several miles to the west, you can see a mountain called Battlement Mesa. In 1976, three men died there in a wildfire later re-created in a training video called *Situation #8*. Every crew member on Storm King would certainly have seen it. In *Situation #8*, a crew is working upslope of a small fire in extremely dry conditions. Flames ignite Gambel oak and race up the hill, encouraged by winds. The steep terrain funnels the flames upward, and fire intensity careens off the chart, a classic blowup. Four men are overrun, three die. The survivor, who suffered horrible burns, says they were never alerted to the critical wind shift—an accusation the BLM denied at the time. . . . ●

120 At about 4:00 P.M. high winds hit the mountain and pushed a wall of flames north, up the west side of the drainage. Along the ridge, the BLM crew and the upper Prineville unit began moving to the safety of H-1. Below them, Don Mackey ordered his eight jumpers to retreat up to a burned-over area beneath H-1. He then started cross-slope to join three other smoke jumpers

3. TAKE NOTES

Reread lines 104–108. What happened around 3:50 p.m.? What had happened at about 3:20? Put these events on your timeline.

6. NARRATIVE NONFICTION

Reread lines 109–119. Why does Junger break away from the action on Storm King Mountain to give information about the wildfire at Battlement Mesa?

deployed with the Prineville nine. Apparently, no one had advised them

that the situation was becoming desperate. In the few minutes it took Mackey to join the twelve fire fighters, the fire jumped east across the drainage. “I radioed that in,” said Haugh. “And then another order came to evacuate.” That order came from Butch Blanco on the ridgeline, who was hurriedly conducting
130 the evacuation. “This was a much stronger warning than the previous one,” recalled Haugh. “I sent my swamper to the ridgetop with a saw and radioed that as soon as the lower Prineville contingent came into sight below me, I would bump up to the safety zone.”

Suddenly, fierce westerly winds drove the fire dangerously close—though still hidden behind the thick brush—to the unsuspecting fire fighters. “The crew was unaware of what was behind them,” said Haugh. “They were walking at a slow pace, tools still in hand and packs in place.” As Haugh watched them, a smoke jumper appeared at his side. “He said that his brother-in-law was down in the drainage, and he wanted to take his picture.”
140 That fellow was Kevin Erickson, and Don Mackey was his brother-in-law, now in serious trouble below. As Erickson aimed his camera, everything below him seemed to explode. “Through the viewfinder, I saw them beginning to run, with fire everywhere behind them,” Erickson said. “As I took the picture, Brad grabbed me and turned me around. I took one more look back and saw a wall of fire coming uphill.” Closing in on Haugh and Erickson were smoke jumper James Thrash and the twelve other fire fighters in a ragged line behind him. Though Blanco and others were now screaming, “Run! Run! Run!” on the radio, Thrash chose to stop and deploy the fire shelter he would die in. Eric Hipke ran around him and followed Haugh and Erickson up the hill. The
150 three-hundred-foot-high flames chasing them sounded like a river thundering over a waterfall.

In his book *Young Men and Fire*, Norman Maclean writes that dying in a forest fire is actually like experiencing three deaths: first the failure of your legs as you run, then the scorching of your lungs, finally the burning of your body. That, roughly, is what happens to wood when it burns. Water is driven out by the heat; then gases are superheated inside the wood and ignited; finally, the cellulose is consumed. In the end nothing is left but carbon. This process is usually a slow one, and fires that burn more than a few acres per hour are rare. The South Canyon fire, for example, only burned fifty acres
160 in the first three days. So why did it suddenly rip through two thousand acres in a couple of hours? Why did one hillside explode in a chain reaction that was fast enough to catch birds in midair?

Fire typically spreads by slowly heating the fuel in front of it—first drying it, then igniting it. Usually, a walking pace will easily keep fire fighters ahead of this process. But sometimes a combination of wind, fuel, and terrain **conspires** to produce a blowup in which the fire explodes out of control. One explanation for why South Canyon blew up—and the one most popular in

TAKE NOTES

Summarize what happened at about 4:00 p.m. Then add your summary to your timeline—in proper order.

conspire (kEn-spFrP) v.
to plan or plot secretly



A fire fighter observing the South Canyon fire

Glenwood Springs—was that it was just so . . . steep and dry up there and the wind blew so hard that the mountain was swept with flame. That’s plausible; 170 similar conditions in other fires have certainly produced extreme fire behavior. The other explanation turns on a rare phenomenon called superheating.

Normally, radiant heat⁶ drives volatile⁷ gases—called turpines—out of the pinyon and juniper just minutes before they are consumed. But sometimes hot air rises up a steep slope from a blaze and drives turpines out of a whole hillside full of timber. The gases lie heavily along the contours of the slopes, and when the right combination of wind and flame reaches them, they explode. It’s like leaving your gas stove burners on for a few hours and then setting a match to your kitchen.

A mountainside on the verge of combustion is a subtle but not necessarily 180 undetectable thing; there are stories of crews pulling out of a creepy-feeling canyon and then watching it blow up behind them. Turpines have an odor, and that’s possibly why some of the Prineville survivors said that something had “seemed wrong.” The westward-facing hillside had been drying all afternoon in the summer sun. Hot air was sucked up the drainage as if it were

6. **radiant heat:** heat that passes through the air, heating solid objects that in turn heat the surrounding area.

7. **volatile:** explosive.

an open flue. The powerful winds that hit around

4:00 P.M. blew the fire up the drainage at the hottest time of day. And turpines, having baked for hours, could **conceivably** have lit the whole hillside practically at once.

When Storm King blew, Haugh had to run 150 feet straight up a fire line with poor footing. Despite **rigorous** conditioning—he is a runner and
190 a bodybuilder—his heart rate shot through the roof and his adrenal glands dumped enough epinephrine⁸ into his system to kill a house cat. Behind him, sheets of flame were laid flat against the hillside by 50 mph winds. The inferno roared through inherently combustible vegetation that had been desiccated,⁹ first by drought, then by hot-air convection, finally by a small grass fire that flashed through a few days earlier. The moisture content of the fine dead fuels was later estimated to be as low as 2 or 3 percent—absolutely explosive. As Haugh ran, panicked shouts came over the tiny radio clipped to his vest for people to drop their equipment and flee. One brief thought flashed through his mind—“So this is what it’s like to run for your life”—and he didn’t think
200 again until he reached the ridgetop.

Above him, the BLM and upper Prineville crews had abandoned hope of reaching H-1 and scrambled toward H-2. When that route too was blocked, they turned and plunged over the ridge. Due south, one hundred feet below H-1, the eight smoke jumpers who had been ordered out by Don Mackey fifteen minutes earlier were crawling under their foil shelters to wait out the approaching fire storm. At Canyon Creek far below, a crew of fresh smoke jumpers who were preparing to hike in watched in horror as eight little silver squares appeared on the mountainside. Meanwhile, hidden from view by smoke, Mackey, the Prineville nine, and the three smoke jumpers were running
210 a race only one of them, Hipke, would win.

In the end twelve of the dead were found along the lower fire line. Prineville hotshot Scott Blecha had also run past Thrash but lost his race a hundred feet from the ridgeline. The rest were in two main groups below a tree—the tree, as it came to be known, where Haugh had started his run—a few clumped so close together that their bodies were actually touching. Only smoke jumpers Thrash and Roger Roth had deployed their shelters, but the blistering heat disintegrated the foil. Kathi Beck died alongside Thrash, partly under his shelter. It seemed that in his last agony, Thrash may have tried to pull her in. In addition, Richard Tyler and Robert Browning, two fire fighters deployed
220 earlier to direct helicopter operations, perished just north of H-2, only a few hundred feet from a rocky area that might have saved them.

The Prineville nine’s dash for safety ended after three hundred feet. They were caught just three or four seconds before Haugh himself cleared the ridgetop, and he could hear their screams over his radio. Reconstructing the details of the victims’ agonized last seconds would occupy many hours of professional counseling for the survivors.

5. **epinephrine**: another name for adrenaline, a natural chemical released by the body that speeds up heartbeats, improves breathing, and increases blood flow to muscles during exercise.

6. **desiccated**: thoroughly dried out.

TAKE NOTES

Based on Junger’s explanation of superheating, what might have been happening for several hours before 4:00 p.m.? Indicate this possible occurrence on your timeline. **conceivably** (kEn-sCvPE-bIC) *adv.* possibly **rigorous** (rGgPEr-Es) *adj.* strict, uncompromising

GRAMMAR AND STYLE

Reread lines 201–203. Notice how Junger uses the **adverb clause** “When that route too was blocked” to describe at what point the Prineville crew plunged over the ridge. Adverb clauses help to add important details to writing, telling when or where something happened, for example.

PATTERNS OF ORGANIZATION

Why do you think Junger chose to present these details in spatial order?



A plane releasing fire retardant on the blaze

covered the quarter-mile slope in about two minutes, hitting its top speed of ²⁷⁰ 18 mph in the dried-out Gambel oak.

The next question was why it had done that. Fire behavior is determined by an incredibly complicated interaction of fuel, terrain, and wind, and there are mathematical models describing the interaction. (The models are programmed into hand-held calculators carried by most incident commanders these days.) The deadly hillside faced west at a 33 to 50 percent slope, and the vegetation on it possessed burning characteristics described in a formula called Fuel Model Number Four. The moisture content of the small dead fuels on Storm King Mountain was around 3 percent. And the live Gambel oak (which had only been partly burned earlier) was several times drier than normal. In a light ²⁸⁰ wind, according to this model, those conditions would produce twenty-three-foot flames spreading at a maximum of seven hundred feet an hour.

That's a manageable fire, or at least one that can be outrun, but an increase in wind speed can change the situation dramatically. At 7:20 P.M. on Tuesday (less than twenty-four hours before the blowup), the National Weather Service issued a "Red Flag" fire warning for the area around Glenwood Springs. Dry thunderstorms were expected the following morning, followed by southwest winds gusting up to 30 mph. A cold front would come through sometime that afternoon, swinging the winds to the northwest.



Fire fighter Eric Hipke revisits Storm King Mountain in 2004.

Gusts of 35 mph, plugged into Fuel Model Number Four, produce sixty-²⁹⁰ four-foot flames racing up the mountain at up to fifteen feet per second. In the superdry Gambel oak, the rate of spread would have been almost twice that—much faster than any human can run. The lessons of the Battlement Mesa fire (detailed in the *Situation #8* video) had not been learned: A small fire on steep ground covered with extremely dry vegetation had once more exploded in a mathematically predictable way—again, with tragic results. . . .

“I know in my heart,” said Haugh, “that the twelve persons who died in that part of the fire were unaware of what was happening.” By the time the Prineville nine and the three smoke jumpers with them saw the horror coming—by the time great sheets of flame hit the dry Gambel oak and frantic³⁰⁰ voices over the radio screamed at them to run—they had only twenty seconds to live. They must have died in a state of bewilderment almost as great as their fear. 3

PATTERNS OF ORGANIZATION

Reread lines 271–295. What pattern of organization does Junger use to explain fire behavior? What type of graphic organizer would you use to record details from this passage?