Butte Fire Staff Ride

Preliminary Study

"During the deployment everyone was really scared. You didn't know what to expect . . .

Everybody knew it was pretty serious. It was definitely a life and death matter."

Mike Parsons, EMT
Carson Hotshot Crew
in 1985 on the Butte Fire

Salmon-Challis National Forest

"As soon as that wall of flame came up, that's when we all snapped our shelters open. We got down on the ground. All we could hear was the roaring sound of a jet plane coming over—about ten feet about us.

We started talking to each other. When the fire got really bad, we weren't talking about the fire—nothing like that. We were talking about everything else—about what that guy did that time with him or her—or whatever.

We changed the whole subject—to build morale. I think that helped keep us alive. We just didn't want to think about that fire when it was going over us, when it was all around us, when it was everywhere.

I've been firefighting for 20 years and that has been the most frightening experience I've ever had. I was in Vietnam for a year. But this beats it all."

Lawrence Tosa, Squad Boss
Jemez Eagles Fire Crew
in 1985 on the Butte Fire

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"It was a wall of fire . . . coming very rapidly, just a reddish-orange gaseous rolling fire with huge gas balls coming off in flame heights of maybe 200 feet."

Fred Schoeffler, Superintendent
Payson Hotshot Crew
in 1985 on the Butte Fire

A. Summary Background

Everyone [the people who were entrapped and deployed on the Butte Fire] interviewed admitted being scared for their life. Fortunately, no one panicked. Good verbal communications, looking after each other, and supervisory control were key factors in preventing panic. Interviewees reported screaming, crying, shock, passing out, and temporary paralysis—or the inability to move—as symptoms of this traumatic incident.

"Fire Entrapment Incident, Butte Fire" Report
September 1985

Dozer line established on the Butte Fire.

High-Intensity Crown Run Forces 73 Firefighters into Fire Shelters

It is the afternoon of Aug. 29, 1985. You are on Division A located in heavy timber on the north end of the Butte Fire on the Salmon National Forest in central Idaho. This fire is part of the Long Tom Complex. At approximately 1550, the fire makes a sudden high-intensity crown run up Wallace Creek, a side drainage of the Salmon River. Over the next 90 minutes, this run will consume 3,500 acres.

Approximately 118 persons on this Division—including hand crews, fallers, dozer operators, and overhead—are overrun by fire. The crown fire run chases 73 firefighters into three pre-identified "safety zones". These safety zones consist of a timber harvest clearcut—where firefighters do not have to deploy fire shelters—and two cleared areas, constructed by the dozers when putting in the dozer line, in which all firefighters deploy their shelters. These people remain in their shelters for an estimated one and ½ hours as the fire burns intensely on all sides of these two safety zones.

Based on historical trends and the absence of a significant change in the weather, it had been expected that the fire would take two days to reach the area where the shelters were deployed. Instead, it took only minutes—especially for the last mile.

The Plan

The plan for August 29 was to complete the dozer line around the head of Wallace Creek and burn out all of Wallace Creek within the control lines. The dozer-built safety zones were created approximately every quarter mile along the dozer line.

Due to the high-intensity crown run, this major burnout operation was never implemented.

The Butte Fire making the high-intensity crown run that entraps and forces 73 firefighters into their fire shelters. Notice the dozer-built safety zones along the dozer line.



V I D E O

Five days after the Butte Fire shelter deployment incident, a video team from the National Interagency Fire Center goes onsite to interview incident participants—standing in the actual safety zone where many had deployed.

To watch this 33-minute "The Butte Fire Shelter Deployment" video:

www.youtube.com/watch?v=2DFggibCDbs

B. Fire Environment

The year 1985 was an extremely tough and active fire year on the Salmon National Forest and throughout the West. The season started with hot and dry conditions in May. One thousand-hour fuel moistures were averaging 15 percent and live fuel moistures also were very low. The Forest started to receive lightning starts in June, and aggressive initial attack was required for control.

Long Tom Complex Fire Review
January 1986

Throughout the summer of 1985, severe drought characterized the conditions in the Butte Fire area. Fuels were at critically low levels. The fire weather station at nearby Indianola along the Salmon River measured only 0.31 inch of precipitation in June and 0.23 inch in July.

While the Butte Fire area did receive an inch of precipitation (some of this as snow) on two different days in early August, only 0.12 inch fell between August 13 and August 31.

To see the two Butte Fire review reports:

http://bit.ly/ButteFireReports

Prior to the crown fire run on the Butte Fire on August 29, a Remote Automated Weather Station near the fire had 1,000-hour fuel moisture readings from the National Fire Danger Rating System rated at 8 percent.

Fuel models 8 and 10 characterized the majority of the Wallace Creek drainage, where the Butte Fire crown run occurred. According to local Ranger District personnel at the time, fuel loadings ranged from 80 to 100 tons per acre in spruce-fir stands in drainage bottoms and from 25 to 40 tons per acre in the higher elevation lodgepole pine-fir stands.

Timber cover in the area was generally lodgepole pine with spruce and fir in the draws and on the northern exposures, and alpine fir at the higher elevations.

Unusual Topography
The topography of the area in which the August 29 crown fire run occurred was unusual.

Unlike most Rocky Mountain topography, the upper slopes here do not converge into sharp peaks, but tend to be more domelike—with continuous crown cover.

The Wallace Creek drainage is a well-defined north-south drainage that becomes progressively steeper at its headwaters near the two fire shelter deployment sites. (See Google Earth map on page 14.)

Elevations on the Butte Fire ranged from 6,400 feet near the confluence of Wallace and Owl creeks, rising to 8,200 feet near the two safety zones in which firefighters deployed their shelters.

C. Weather

The weather for the three days prior to the Butte Fire entrapment incident was not uncommon for this area.

Typical late afternoon maximum temperatures reached 70 to 78 degrees. Minimum relative humidity ranged from 12 to 21 percent. The windiest period each day occurred between 1400 and 1500, with velocities generally ranging from 10 to 12 mph—with higher gusts.

Similarly, August 29, the day of the entrapment, exhibited this typical weather pattern. Afternoon temperatures were in the mid-70s with minimum relative humidity in the upper teens. In the afternoon, low level winds from 8 to 12 mph were out of the south—with occasional 17 to 20 mph gusts.

D. Fire Behavior

The type of fire run that was observed in upper Wallace Creek on August 29 was not unusual for lodgepole pine fires that occurred throughout the northern Rocky Mountains during the 1985 fire season. These high-intensity fire runs resulted from the drought-induced, extremely low fuel moistures in all class sizes. These conditions typically triggered surface fires that could easily transition to torching, spotting, and crowning fires.

On the Butte Fire on August 29, the southerly gradient wind reinforced upslope and up-canyon afternoon drainage winds in Wallace Creek.

View from a helicopter reveals the aftermath of the intense crown run that burned up Wallace Creek drainage. All crown needles and surface fuels are essentially gone.

Continuous Fuels and Lack of Topographic Barriers

The continuous fuels and lack of topographic barriers allowed the Butte Fire to move up the slopes of Wallace Creek drainage with only moderate winds.

The topography most likely contributed substantially to the fire behavior and difficulty to control. The steep slopes extending up from the valley bottoms helped to account for the rapid upslope runs. In addition, the ridge tops were rounded and covered with continuous fuels. Thus, no definite fire barriers—such as steep rocky slopes, sharp ridges, or scrubby subalpine fuels—were available to help slow fire spread.

The fire appeared to move through upper Wallace Creek as a continuous, high-intensity wall of flames. Eye witnesses reported flame lengths from 200 to 300 feet that approached the firefighters on the dozer line at the head of Wallace Creek. Another observer indicated that the flames "rolled like waves over the tops of trees toward the ridgeline."

"If there wouldn't have been that safety zone, we probably wouldn't be here," Greg Toya, Crew Boss of the Jemez Eagles Fire Crew, told Butte Fire investigators. "The fire was so hot and so fast. The heat was so intense. It was just unreal."

Top Left
The Butte Fire burning up the drainage toward the various line personnel on August 29, 1985.

Top Right
The crown fire run approaches the top clearcut safety zone area.

Bottom
The fire just before it burns into the the clearcut safety zone area.

All three photos on this page taken by Steve Karkanen.

Top photo shows a destroyed vehicle—a total loss—that burned at the top clearcut safety zone area. This privately-owned vehicle belonged to a contract timber faller. Bottom photo shows an engine and crew members—also located at the top clearcut area—as the fire passed through. Steve Karkanen, who was a firefighter on this 3-person engine crew from the Lolo National Forest, took these photos. "We were showered with embers and spent much of the time putting out small fires on the engine and within our little safety circle," Karkanen recalls today.

E. Prior to Butte Fire, 85 Shelters Deployed on the Lake Mountain Fire

Approximately eight weeks before the Butte Fire shelter deployment incident, another multiple shelter incident had occurred on the Salmon National Forest.

On July 4 on the Lake Mountain Fire, a rapidly moving fire front—"driven by unpredicted 20-30 mph winds from the south" according to the "Lake Mountain Incident Fire Shelter Deployment" report—jumped fire lines.

To see the two Lake Mountain Fire review reports:

http://bit.ly/LakeMntReports

Personnel on the fire were forced into two pre-designated safety zones—a rock slide area and a dozer-cleared area.

Four hand crews deployed shelters. Two contract fallers—with only one shelter between them—had to share it. These men said that as the fire and intense heat passed directly over them they thought they were going to die.

A dozer operator dug a trench beneath his machine and sought refuge there.

A total of 85 firefighters entered their shelters at approximately 1730. The intense heat and smoke kept these people in their shelters for about two hours. (Due to smoke, dust, and strong winds, some firefighters stayed in their shelters for up to three and ½ hours.)

The Division Supervisor said the people in the rock slide—due to its "marginal size"—experienced more heat. "One shelter was scorched yellow. Plastic canteens melted. One person's shoelaces melted where they touched the shelter. The shelters probably saved lives," the Division Supervisor informed.

In the dozer-cleared safety zone, this Division Supervisor and two Strike Team Leaders did not deploy their shelters. Because the two 20-person hand crews in this safety zone were inexperienced younger (16- to 20-year-old) firefighters, these supervisory personnel realized the importance of circulating among the deployed shelters to talk and encourage these younger firefighters in an effort to keep them calm.

"It is my opinion that the deployment of all the shelters was necessary," the Division Supervisor told the incident's review team. "I don't think the panic of some of the crew members could have been controlled if they hadn't been in their shelters. I think we would have also had some cases of smoke illness and burns from sparks and radiant heat. I experienced a sunburn-like burn on my face—which still burns some, one day later."

As an indication of the wildland fire culture in 1985, the "Fire Shelter Deployment, Lake Mountain Fire" review report opened with the following quote in big bold capital letters:

"A DEPLOYED FIRE SHELTER
IS THE END RESULT OF AN EARLIER MISTAKE!"

F. Bill Williams, Operations Section Chief, Shares His Perspective and Insights

Bill Williams, Operations Section Chief on the Incident Management Team assigned to the Long Tom Complex—which included the Butte Fire and Sourdough Fire—recalls the strong direction his team received from the Forest Supervisor when they took command of this incident.

"This fire had been declared controlled once before and it had escaped," Bill explains today. "So the Forest Supervisor was very adamant. He didn't make any bones about it. He told us: *'I want this fire put out now and keep it out of Horse Creek'*."

Bill says that his IMT was OK with this strong direction, but they also realized that it didn't provide them with much "wiggle room".

Bill explains that after his team got on the fire and assessed the situation "we agreed among the line folks—my Division Sups and myself—that it was unsafe to go direct on most of this fire because it was burning down in these steep chutes that were coming out of Wallace Creek and the main Owl Creek."

Bill Williams, Operations Section Chief, on the Butte Fire.

Bill continues, "The fire was ragged, the edges were up and down. To try to put 25 crews down in there working direct, we'd have killed somebody. There was no way you could prevent the fire from making quick runs uphill in that steep ground and maybe trapping somebody."

Dozer Operator Changes Mind on Safety Zone Size

When Bill Williams, Operations Section Chief, told the people on the line that the dozer-built safety zones needed to be larger in size, they weren't too sure about that.

"They kind of backed up a little and said: *'They're a pretty good size now'*. We disagreed," Bill recalls. "We told them they're not big enough."

Bill later learned that one of the dozer operators had said: *"That's crazy. These safety zones are huge."*

This same dozer operator was working on enlarging one of the safety zones when the fire blew-up. He ended up in a fire shelter—and survived there.

Bill informs that after surviving the blow-up incident this particular dozer operator later told people: *"If it was up to me again, I'd make those safety zones twice as big."*

Dozer Line on Ridgetop with Dozer-Plowed Safety Zones

The Operations Section Chief says that's why they decided to anchor their fire line up on the ridgetop.

"We looked at the ridge," Bill recalls. "We decided it was a good ridge but there were no safety zones—there were no breaks in the timber. It was pretty much a solid canopy. So we decided to use dozers."

Bill explains that they started preparing dozer line on the main ridge between Owl Creek and Horse Creek. They had intended to burn that line out the day the blow-up occurred.

The night before, crews worked to finish the dozer line—including using the dozers to build safety zones.

"We didn't like the fact that there was no place to go if something went wrong," Bill says. "So we needed safety zones for people and we had them go ahead and construct them. With the kind of conditions we had and the timber canopy we had, I wanted to be sure we didn't have somebody up there with no place to go but into the timber."

When Bill and the Incident Commander flew the fire at daylight on the morning of August 29 (the day of the blow-up), Bill looked down at those safety zones.

"I told the IC: *'They're not big enough. The timber is too tall. If something should happen and we'd have to park a dozer in one of them or have a crew try to shelter in it, it's not big enough. We need to increase the size by another 50 percent.'* And the IC agreed."

Photo shows the dozer line along the ridgetop with two of the dozer-built safety zones.

A New Problem with the Original Plan: Two Surprises

The morning of the blow-up, the original plan was to have the hand crews burn out the north dozer line along the ridgetop between Owl Creek and Horse Creek. Once this burnout operation was established, they were going to implement some center firing down the hill with a helicopter and helitorch to help pull the burnout away from the line and try to prevent spotting.

"But that morning we had two surprises," Bill explains. "First, when we flew the fire we discovered that the bottom fire line was in jeopardy. The fire was getting very active down there. It was obvious that we were going to lose that line if we didn't burn it out quickly. So that threw things off from our original plan."

Due to this discovery, they shifted their priorities and decided to burn out the bottom line first with the helicopter and helitorch. "That burnout operation successfully cleaned everything up. It worked great," Bill remembers.

He points out that the second problem that morning was the fact that one of their aerial ignition helicopter pilots quit. "He said *'I've had it'* and just walked off," Bill recalls. "I think he'd had a long season. So now we're down to one helicopter instead of two—with only one helicopter to fire with. That kept us from being able to go ahead and start firing on the top line. Now, we didn't have the option to use one ship up on top to create heat while we're using the other one to take care of the bottom. That's why we were still working to secure that bottom line when everything went sour."

Weather Forecast

At the August 29 morning briefing Bill remembers the meteorologist saying that the weather that day would be pretty much a carbon copy of the day before. "And, of course, we didn't have any major runs the day before," Bill says. "We had small runs down in the steep chimneys in Owl Creek—but no major runs."

That morning, Bill also recalls how the meteorologist said that the weather that day was going to be a little more unstable. "Well," Bill acknowledges in retrospect, "neither he nor anybody else realized what that really meant for us that day."

Later that afternoon when the fire blew-up, from Bill's position in the helicopter, he could see eight other big smoke columns from ongoing fires on the adjacent National Forests. "All of them were standing up with strong columns."

Bill says that this change in atmospheric instability on the Butte Fire helped prompt the study that led to the establishment of the Haines Index, based on atmospheric instability.

Sidetracked

In looking back at the events that occurred on the Butte Fire on August 29, 1985, Bill shares a personal insight.

"In all honesty," he confides, "I probably did get a little sidetracked from what was going on up on top because I was in that helicopter with Air Attack while we were burning out that bottom line."

But, after all, in the context of that morning, that was the priority—burning out the bottom line with the helitorch.

"We'd invested too much work and time into that line to risk losing the bottom of the fire," Bill explains. "We knew that if that happened, it would negate everything that we'd also done up on the top."

Bill Williams' Lessons Learned

Line Officer Flexibility

Bill informs that all of his IMT's actions on the Butte Fire were tied to the Line Officer briefing, which didn't leave them many options. "Basically, the Line Officer said: *'Full suppression. I want that sucker put out. It's an embarrassment to me. It's an embarrassment to the Forest Service. I want it put out and I want it put out quickly'*."

With the benefit of retrospection today, Bill now realizes that "it would have been really smart to just agree that we were not going to order the 25 crews to go full suppression until we got a change in the weather where we could get in and go direct on the fire. And we got that about two days after the big blow up."

He continues, "In hindsight—which is always 20/20—that would have been the best approach. But I don't believe we had that option. I think if we'd have said: *'Well, we think this is what we should do,'* the Forest Supervisor would have said, *'Well, I want you to put it out. If you don't want to do that, I'll get another team that will'*."

After his Butte Fire learning experience, Bill says if he was ever put into that situation again "I would confront the Line Officer with exactly the bind he was putting us in. Because we're going to be trying to stuff people into a really dangerous situation.

"Cost wise, safety wise, and even resource damage wise, I think the best option would have been to wait, to keep the small crew that we had, and try to safe-up the lines on the bottom," Bill says. "Then, when we got the forecast for a half-inch of rain—which we did about two days later—then order the 25 crews so that you've got them there ready to go when you get the good conditions and you go in and nail it direct."

Avoid Using a Branch Organization

Bill advises that, if you can, try to avoid using a branch organization. "If I ever had to do it again," he says, "I would have used a Deputy Ops Chief and put him over there on the Sourdough Fire so I didn't have to worry about that one. I'd have stayed with Division assignments and I would have had a lot better control of what was going on and a lot more knowledge of what was happening on the ground."

Don't Depend on 'Eyes in the Sky' or Someone Up the Chain-of-Command

Bill acknowledges how, on previous days on the Long Tom Complex, the ground crews were using Air Attack for watching what was going on and keeping them informed. On August 29, when Air Attack and the overhead became involved in trying to get the line burned out on the bottom, these crews no longer had those eyes in the sky.

"The people on the ground need to remember that every firefighter is responsible for their own safety and the crew bosses and line overhead are responsible for the safety of the people under them," Bill emphasizes. "They shouldn't wait for the Ops Chief or anybody else to say: *'Hey, this is a bad situation'*."

Bill provides an example. "We had three hotshot crews helping to prep that line in there (up on top of the ridge). They saw that things weren't working out and they didn't like the feel of it. So when that thing blew, those hotshot crews were already up in the big clearcut. They had pulled their people out." [See a summary of these actions on page 17.]

To this day, Bill is a little perplexed as to why—when the other crews saw these hotshot crews pulling out—they didn't do the same. "Maybe they were thinking that the Ops Chief was watching out for them. But let me tell you something, on a big fire the Ops Chief has got so many irons in the fire that you can't saddle him with that. He's going to do the best he can. But everybody's going to have to look out for their own safety." Bill's bottom line word of advice: "Don't depend on eyes in the sky or direction from someone up the chain-of-command being what keeps you out of trouble."

Don't Become Complacent

Throughout his career, Bill was always a strong proponent of never becoming complacent. He assures that he wasn't complacent on the Long Tom Complex on August 29, 1985. "I knew we had a tiger by the tail—and it still happened. And, you know, I spent my entire career trying to prevent things like that."

Jim Steele on the Butte Fire five days after the entrapment incident.

G. First-Person Account

A significant insider's summary overview of what occurred on Division A

Jim Steele was the Division Supervisor on Division A of the Butte Fire. He arrived in Sourdough Camp on the morning of August 28 and went right to the line in Division A. He was also on Division A the following day, when the entrapment incident occurred. He was among those who deployed. The following is Steele's statement of actions on the Butte Fire, beginning on August 28.

Organization

Division A was located between Drop Point 29 and Drop Point 30. Drop Point 29 was located at the point of the ridge intersecting the main Spring Creek Road. Drop Point 30 was located in the main saddle along the ridge that also intersected the main Spring Creek Road approximately 1.5 miles east of Drop Point 29.
[See map on page 14.]

Wednesday, August 28

1. Division A extended from Drop Point 29 to Drop Point 30. I was assigned a 10-Person Jumper Short Crew from Grangeville, a Lolo National Forest Engine Strike Team with Strike Team Leader Larry Sears, and a Strike Team of Dozers. We spent the day doing orchard work (pruning, pulling brush out of the burnout side, cutting saplings and submerchantable trees/thinning the understory) along the proposed fireline. At this time, it was a contingency fireline with crews going direct below us in Owl and Sourdough creeks.

2. About mid-afternoon when the fires in Owl and Sourdough creeks became active, the crews from the lower Division B and C (Division Supervisor Dave Broberg) moved upslope into Division A and assisted with our work.

3. My Branch Director was Dan Schindler whom I talked with throughout the assignment.

Thursday, August 29 [See actual shift plan for this day on page 37]

1. During the morning briefing we were informed that the IMT had decided to abandon going direct and would improve contingency fireline for the early evening helitorch burnout. We were told, based on RH readings, that at approximately 1730 hours the RH had been climbing at an increasing rate. This would therefore be the target time to initiate the burnout. We did not know the burn plan ignition sequence: Would we light the fireline and the helitorch would work the interior?—or vice versa? We also had no discussion of what the plan was for the open fireline below Drop Point 29 on Division C. *[Editor's note: Steele says they weren't aware of the earlier helitorch operation that occurred that day in Owl Creek. At the morning briefing, they were only notified about—not briefed on—their 1730 helitorch operation.]*

Butte Fire General Overview Chronology

A lightning strike starts the Butte Fire on **July 7**. The fire becomes part of the Long Tom Complex in the Salmon River area that includes three other active fires.

On **July 20**, strong winds blow up the Butte Fire and Fountain Fire. With crowning and spotting, in one and ½ hours, the Butte Fire grows from a spot to 400 acres. The upper end of the Butte Fire is located in heavy timber fuels. For the next two weeks, this fire will crown in the afternoons—pushed by thunder cell winds and drops in humidity—and burn several hundred to several thousand acres per day.

On **August 5**, the Butte Fire is contained at 20,000 acres. On **August 11**, approximately one and ½ inches of snow falls on the fire. A nearby weather station records 0.69 inches of precipitation.

On **August 24 and 25**, strong winds fan smoldering fires outside control lines.

Fire behavior activity on the Butte Fire peaks three consecutive days. **On August 27** the fire makes a 1,000-acre run. On **August 28** a 2,000-acre run occurs.

Having little success with a close-in direct attack, on **Aug. 26-27**, the overhead team decides to use an indirect strategy. On **Aug. 28 and 29**, a dozer line is built along the main ridge on the fire's north end. This line construction includes several dozer-created safety zones approximately ¼ mile apart.

The fire run on **Aug. 29** consumes 3,500 acres—3,000 of which reportedly burn during a 90-minute time period.

The fire perimeter projections for August 27 and 28 were very good at about an 80 percent-plus accuracy. The projection for August 29 was a growth of approximately 1,200 acres in a northeast-east direction. Rate-of-spread projections for August 29 were 8 to 10 chains per hour and some estimated actual rate-of-spread at 8 to 10 chains per minute.

Without a significant change in weather, the fire was expected to progress easterly up Owl Creek rather than north up Wallace Creek.

Long Tom Complex Fire Review
January 1986

The Plan: Implement Burnout Operation in Late Afternoon

The initial plan for Aug. 29 is to implement a burnout operation in the late afternoon when the humidity is expected to rise. An aerial drip torch (helitorch) is to be used for center firing in the upper end of Wallace Creek. Once a convection column is developed, crews will burnout from the dozer line.

However, during the morning, spot fires near the confluence of Wallace and Owl creeks threaten "valuable" timber and seem to have the potential to outflank the control line to the east. It is therefore decided to use the helitorch earlier in the day to burn out and stabilize the line in this area. Initial attempts with the helitorch operation begin just to north of Owl Creek.

[Division Supervisor Jim Steele's Account – Continued from Page 12]

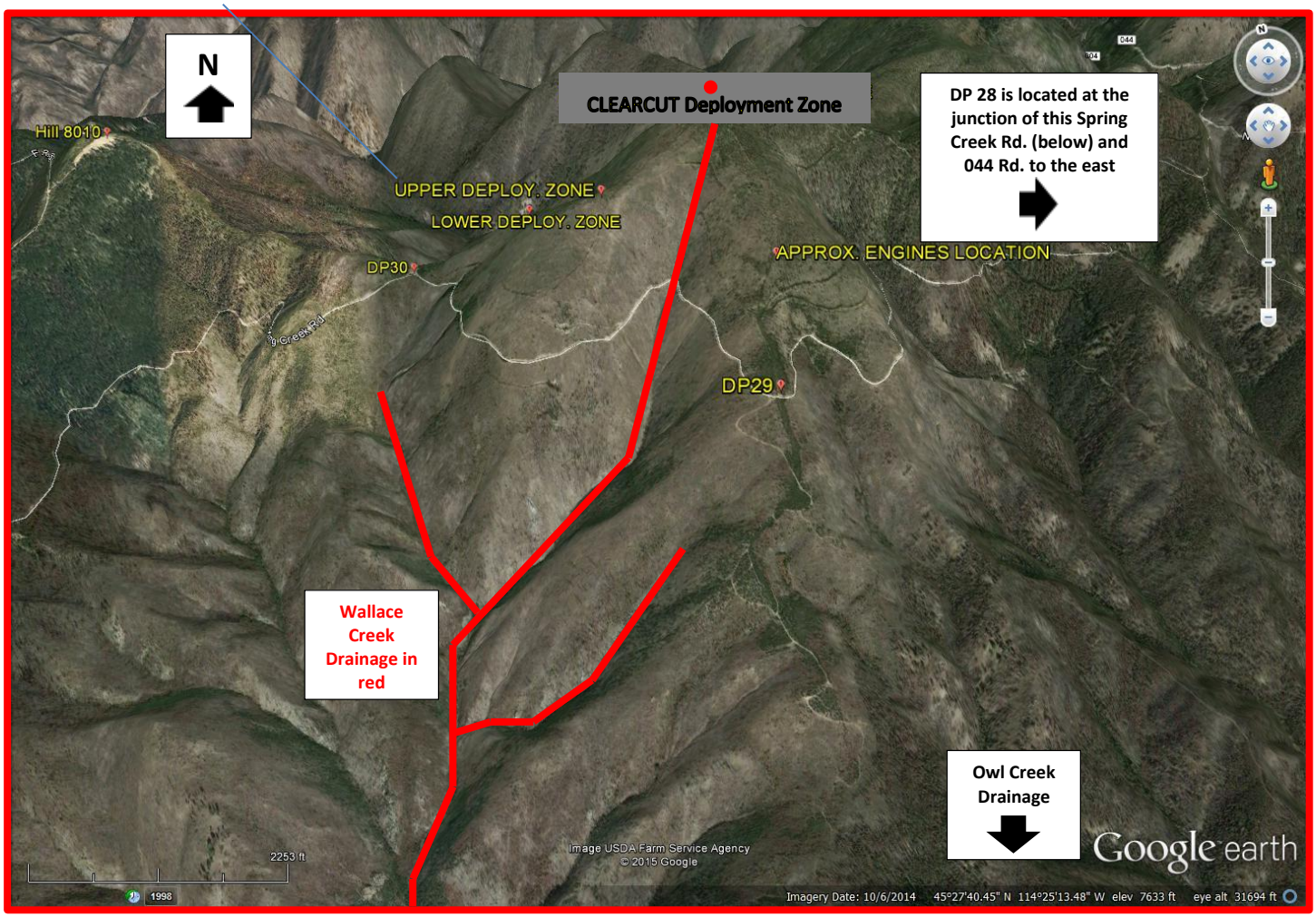
2. My assigned resources were: One Type 1 Crew Strike Team with Payson, Flagstaff, and Carson hotshot crews with Strike Team Leader Jack Ebberts, and a Dozer Strike Team with 2 D8s and 1 D6 (more like a taskforce) with Strike Team Leader Bob Ralphs. I also had the Five-Engine Strike Team from the Lolo National Forest with Strike Team Leader Larry Sears.

   Our assignment was to push hard to connect dozer lines from Drop Point 29 through to Drop Point 30 before 1730 hours. We were also told to construct "safety zones" every ¼ mile as part of the fireline.

Our assignment was to push hard to connect dozer lines from Drop Point 29 through to Drop Point 30 before 1730 hours. We were also told to construct "safety zones" every ¼ mile as part of the fireline.

We were informed there were no drip torches in base camp supply because they had all been taken to the fireline two days' previous. Their locations were unknown. I ordered 4-5 cases of fusees and a 55-gallon barrel of slash mix which was delivered to Drop Point 29.

I walked the Division first thing the morning of August 29 and located both deployment sites—on the knob along Tin Cup Ridge above Drop Point 30, and on a bench about half way down the ridge to Drop Point 30 from the Tin Cup Ridge deployment site.



[See another comprehensive map showing fire spread on page 23.]

3. I met with Fred Schoeffler (Payson Hotshot Crew Supervisor) and Roy Hall (Flagstaff Hotshot Crew Supervisor) at approximately 1200 hours on the road at Drop Point 29. We talked about how we would burn out the lower fireline. We talked about having a few people below the road and how the burnout could progress upslope so the torch people could burn their way into the large clearcut and not have to retrace their steps through ground that was on fire. We talked about fire whirls where the Spring Creek Road right-of-way cut through the fire and burnout area.

4. The Engine Strike Team crews were working the lower timber areas along the fireline from the clearcut down to Spring Creek Road. We were using a widened area just above Drop Point 29 as a parking lot. There were approximately eight vehicles parked there.

5. Just after 1200 hours, Branch Director Schindler contacted me and said the Division A boundary was extended from Drop Point 30 up to Hill 8010, adding approximately another 0.8 miles. They were also sending me another Crew Strike Team (Jemez Eagles and Flame-n-Go fire crews) with Strike Team Leader Ron Yacomella. Branch Director Schindler asked if I needed additional personnel resources beyond this. I said no. I met them (Jemez Eagles and Flame-n-Go crews and STL Yacomella) at Drop Point 30 and we discussed what to do. This consisted of orchard work and cutting paths through the slash berm in case people were chasing spot fires. They would then have avenues to leave and regain the fireline. We talked about the burnout. Our biggest concern was having enough fusees because we anticipated difficulty lighting the beargrass with fusees.

6. I walked back up the fireline to the upper deployment site from Drop Point 30. The two large dozers were improving fireline and continuing to improve the deployment site. I hung out there for a while talking with Strike Team Leader Ebberts while watching the dozers work.

7. The Dozers worked side-by-side pushing vegetation back as far as they could against the reserve timber stand on the fuel side of the fire. The debris pile reached about 6-8 feet high. They pushed until their tracks churned in the dirt. When they had pushed back everything they could, they looked at it and said they wanted to go back down to the lower deployment site and widen it. *[Editor's Note: This is what was occurring when Jemez Eagles and Flame-n-Go were running back into this deployment site. See Tracy Dunford and Scott Marlin's accounts on upcoming pages.]*

8. I had conversations with Division F (Division Supervisor Finley) occasionally throughout the day. We visited face-to-face about how we would burn out the fireline from Hill 8010 and Tin Cup Ridge down to Drop Point 30 in the saddle. We talked about the saddle being a weak point and when we might disengage when the slop-over or spotting would be too overwhelming. This conversation took place prior to 1200 hours when I inherited that additional part of the fireline. We discovered four drip torches cached in the brush. We split them between the two Divisions.

Broader Perspective of Aug. 29 Events

1100 Hours

While the helitorch operation is in progress down in Owl Creek, the Butte Fire is developing strength and becoming active in lower Wallace Creek.

A crown fire is starting to move to the north up Wallace Creek on a western exposure on the east side of the drainage through extremely heavy fuels.

1230 to 1300 Hours

This is the approximate time that Division Supervisor Steele radios his Branch Director to inquire about the smoke that is continuing to escalate around his location.

The crews located at the head of Wallace Creek drainage are in heavy timber which restricts their visibility.

For a complete explanation of what happens next, see Steele's account, beginning with his #9 on the left.

Confusion Just Before Fires Accelerate Burning Intensities – Steele is Told These Fires are 'Several Air Miles Away'

9. There was confusion just before the fires accelerated burning intensities. The atmosphere all around us was filling with smoke. I called my Branch Director and asked about the fire and the smoke. He replied he would ask Air Attack, however it might be a short while as they were engaged in a helitorch burnout [in Owl Creek]. He called shortly after and reported the fires were "several air miles away" from our location. Strike Team Leader Ebberts and I discussed the situation. Approximately 15-20 minutes later, I repeated my call to Branch Director, once again referring to increasing smoke, and requested a flyover. I got the same answer: Aircraft in use were unavailable due to the helitorch burn. *[Editor's Note: During this time, one available helicopter is located at the nearby helibase. The other available helicopter—occupied by the Operations Section Chief, Air Attack Supervisor, and Fire Behavior Analyst—is observing and helping direct this helitorch operation. Out on the line, it is assumed that the aerial reconnaissance (lookout/eyes in the sky) is taking place this shift just as it had been the previous days on this fire. However, today, due to the helitorch operation, this aerial reconnaissance is not being maintained.]*

I repeated my call to Branch Director, once again referring to increasing smoke, and requested a flyover. I got the same answer: Aircraft in use were unavailable due to the helitorch burn.

10. I walked up the ridge to Tin Cup summit to gain a vantage point. The air was very smoky and it was increasing. Ebberts walked out on the ridge point below the Tin Cup deployment site into the fire side. He called Branch Director and asked about the visible smoke column. Branch described what he was seeing; since it did not fit what Ebberts was looking at. He then—rightfully—concluded it was a different column and much closer to us than the one in Owl Creek. Based on this, I called Strike Team Leader Yacomella and requested they bump up to the Tin Cup deployment site. During the short time following this, the fire accelerated burning, spread, and spotting. They were only able to make it to the lower deployment site.

11. What I saw was the atmosphere clearing as the fire grew in intensity. Then I saw fire burning up over the farthest ridge I could see that separates Owl Creek from Wallace Creek. The flames appeared to be 300-400 feet high. I walked back down to the Tin Cup deployment site. Winds were increasing. We saw spot fires developing in areas in which we had just previously done fuels reduction work.

The Butte Fire making the 3,500-acre high-intensity crown run up Wallace Creek drainage on August 29.

12. I told everyone to get their shelters out and prepare to deploy them. I called Payson Hotshots and told Fred to burn out in the clearcut if they needed. I also asked if they would send a runner to Spring Creek Road and bring the D6 Dozer up into the large clearcut. They did, and he entered the clearcut by the Engine Strike Team just as the fire hit that area. He dropped the blade and scraped fireline around the engines. I dropped my radio to ground when we decided to go into fire shelters. Just then, Strike Team Leader Yacomella called and requested to burn out from their location. Winds were increasing. While holding my shelter so it wouldn't blow away, I told Ebberts—because he hadn't yet pulled out his shelter—to reply "Yes". He did that and we all went into our fire shelters.

I told everyone to get their shelters out and prepare to deploy them.

Friday, August 30

1. The next day following the deployment we were listed on the Incident Action Plan. We were to burn out around the previous spike camp that had been evacuated during the fire's run on the 29th. However, during the morning briefing, Bill Williams, Operations Section Chief, decided we should stay in. We went back on line the following day, when we: burned out around the old spike camp; built hotline with crews from road anchors up to the main divide ridge (Montana/Idaho state line); and connected with crews from the Bitterroot National Forest side coming over. The Bitterroot National Forest had put their IMT2 on the fire that slopped over the main ridge. We would coordinate with them each day forward.

2. Following this, new overhead was brought in to replace existing overhead. I went from Division Supervisor to Strike Team Leader-Crews, as others also did. At one time, I had five crews as a Strike Team Leader. We functioned this way for a couple days until the weather settled in and we were demobilized.

H. Hotshot Superintendents' Heads-Up Observations and Actions that Preceded the Fire Run

These are quotes taken from the 1993 video "Look Up, Look Down, Look Around"

https://www.youtube.com/watch?v=EUP4lrK1dUw

Roy Hall, Superintendent of the Flagstaff Hotshot Crew in 1985
[Starting at approximately 12:25 in the video]

"Several factors influenced our actions. The previous day [Aug. 28] we were also on this Division. As we visited with the Branch Director and our Division Supervisor our indications to them was that of concern that Drop Point 28—due to topography and the winds that we had experienced and also due to the weather factors, low humidities and high daytime temperatures—was not a good place.

There was a great possibility that great fire intensity could occur. We continued to work in that area and monitored the weather."

Fred Schoeffler, Superintendent of the Payson Hotshot Crew in 1985
[Starting at approximately 13:00 in the video]

"I started taking weather readings around 1 o'clock [on Aug. 29] and came up with RH's in the high 20s. We decided to break for lunch and when we got RH's around 20 percent we talked and decided it would be best to pull all the way out rather than to this safety zone that was below us, below Drop Point 28.

We decided it would be better to pull out of the timber up into the clearcut to the north of Drop Point 28."

Roy Hall, Superintendent of the Flagstaff Hotshot Crew in 1985
[Starting at approximately 13:40 in the video]

"Earlier that morning, about 10 o'clock, we identified the fire activity was increasing. At that time we identified plumes developing in the Wallace Creek drainage and Sourdough Creek drainage.

As we broke for lunch, it was evident that the fire activity was on the increase."

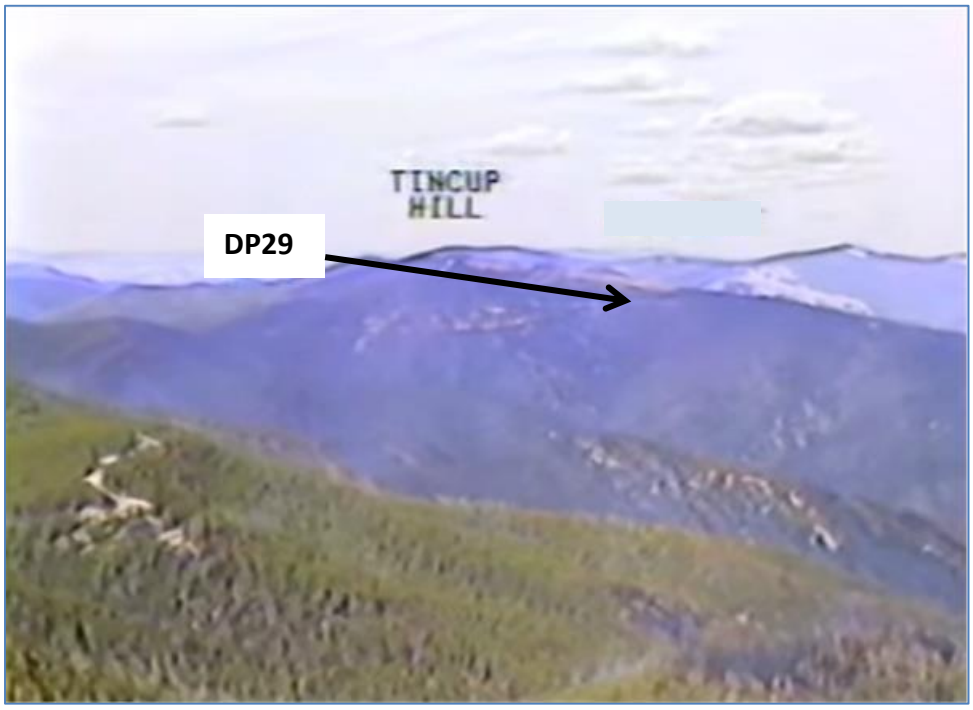
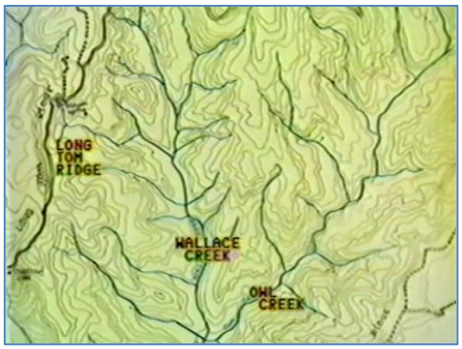


Photo shows approximate location of Drop Point 29 where Div. A. Supervisor Steele met with the Payson Hotshot Crew and Flagstaff Hotshot Crew supervisors at approximately 1200 hours. Tin Cup Hill is the location of the top safety zone.



Concurrent Fire Activity

Between 1500 and 1515 on Aug. 29, the Butte Fire Incident Commander is returning to the fire by helicopter.

He says that while viewing the Butte Fire he can see three other convective columns: the Goat Creek Fire on the Salmon National Forest, the Hand Meadows Fire on the Payette National Forest (a new start), and a third fire on the Nez Perce National Forest.

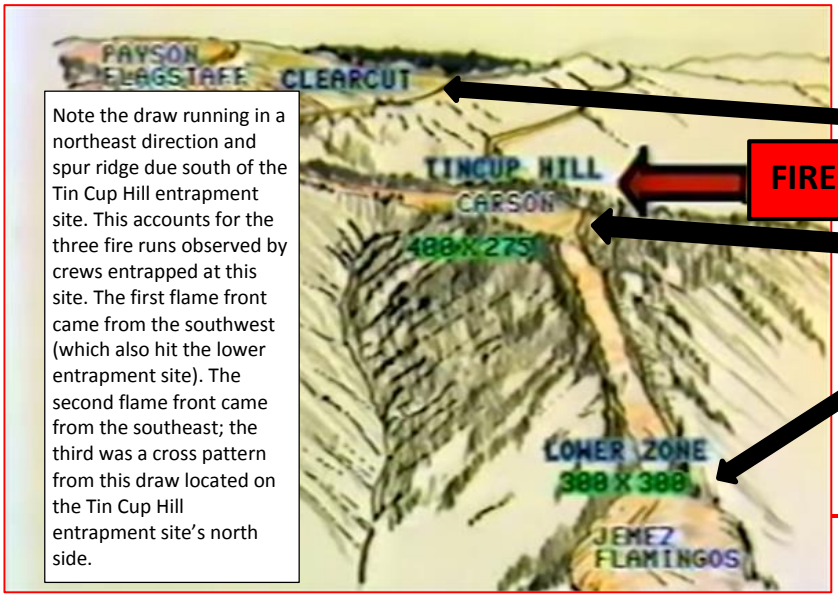
With the exception of the Goat Creek Fire, these fires are extremely active with apparent strong convective activity and substantial rates of spread.

A Different Fire Run Also Threatens Firefighters

While the major crown fire is running up Wallace Creek drainage, another fire outside the dozer line on the west side near Drop Point 30 also threatens firefighters.

Initially, this fire spreads north, but then turns east—most likely due to in-drafts from the larger column in Wallace Creek. This secondary run threatens firefighters along the line on the Butte Fire's west side.

They are successfully evacuated by pickup truck and helicopter.



Note the draw running in a northeast direction and spur ridge due south of the Tin Cup Hill entrapment site. This accounts for the three fire runs observed by crews entrapped at this site. The first flame front came from the southwest (which also hit the lower entrapment site). The second flame front came from the southeast; the third was a cross pattern from this draw located on the Tin Cup Hill entrapment site's north side.

Drawing (on left) shows the locations of the three entrapment areas:

Top, the **clearcut area** where the Payson Hotshot Crew and Flagstaff Hotshot Crew along with other personnel do not have to deploy fire shelters.

Middle, the dozer-cleared **top safety zone** (400 by 275 feet) on Tin Cup Hill where the Carson Hotshot Crew and other personnel deploy their fire shelters. It is located approximately ¼ mile west of the clearcut.

The dozer-cleared **lower safety zone**—which was the smallest (300 by 300 feet) and became the most hot—in which the Jemez Eagles Fire Crew and the Flame-n-Go Fire Crew, along with other personnel, deploy their fire shelters. It is located approximately ¼ mile west of the top Tin Cup Hill safety zone.

I. First-Person Account

In 1985, Tracy Dunford was the Crew Boss for the Flame-n-Go Type 2 Inmate Fire Crew. The following is Dunford's statement of observations and actions on the Butte Fire on August 29.

Tracy Dunford on the Butte Fire five days after the entrapment incident.

Perhaps one of the most important things to point out is that we *[the Flame-n-Go Crew]* were not assigned to that Division that day. Our assignment was to prep a piece of contingency line nowhere near Tin Cup Hill.

We had been working for some time that day when someone pulled up and asked if we "wanted to burn out". Of course that was better than prepping line, so we packed up and headed out.

We parked our rigs in the large clearcut and marched in through the clearcut and onto the cat line past the Payson, Flagstaff, and Carson hotshot crews. We were put into a Strike Team with the Jemez Eagles Fire Crew with Strike Team Leader Ron Yacomella in charge.

Our assignment was to burn out and hold the line to the west of the safety zone on Tin Cup Hill, where the Carson Hotshots were located.

Concerned with the Enormity of the Assigned Task

Initially, my concerns were less related to the potential fire behavior that we might experience. I was more concerned with the enormity of the task that we were being asked to undertake.

To begin with, we had nowhere near the number of people needed to burn and hold this section of line. We were spread thin. I walked past Drop Point 29 *[see map on page 14]* before tying-in with adjacent forces—and that was only one person scouting line. I never did see any other crew personnel or other resources to the west.

Add the decreased visibility from smoke, and we figured we would never even see a spot fire until it was well established and beyond our capability to manage.

Dozer Debris Berm Poses Potential Risks

Secondly, on the green side of the line there were huge piles of debris left by dozers and crews from constructing the line. I remember it as a continuous pile of slash—15 to 20 feet tall in places and at least that wide—that continued along the entire length of the line.

The primary concern was that this slash presented a very receptive bed of fuel that—if ignited—would be impossible to extinguish with the resources on scene. In addition, we were concerned that if the fire spotted across this continuous dozer pile of slash, it would become an impossible barrier for the holding forces to get across. Add the decreased visibility from smoke, and we figured we would never even see a spot fire until it was well established and beyond our capability to manage.

Ordered Into Safety Zones

I spread the crew out as much as practical—with instructions to construct and mark paths through the debris pile—and to improve the line for burn out. We were spread out to the west of Jemez to approximately Drop Point 29. Jemez was to the west of Carson and east of us.

I headed west to tie-in and coordinate with adjacent forces and build some situational awareness. About half way between Drop Point 29 and the top of the hill to the west, I ran into a scout from the crew to the west. We talked for a very brief time. Smoke from the fire coming up Wallace Creek began to roll over the top of us. We were ordered into safety zones.

The scout ran to the west. I ran to the east to tie-in and gather up my crew members.

The first crew members I encountered were at Drop Point 29. An area had been cleared at this drop point but it was in a saddle. It was obvious that it would make a poor safety zone. So we continued to the east. There was a safety zone above Drop Point 29 and below what was eventually referred to as the "lower safety zone".

An area had been cleared at this drop point but it was in a saddle. It was obvious that it would make a poor safety zone. So we continued to the east.

Wind Shift Provides Opportunity to Make it to Lower Safety Zone

When we made it to that safety zone (above DP 29), the smoke column appeared very close and was still building.

This safety zone was small—not quite 100 feet by 100 feet—and therefore did not seem adequate to withstand the impact of the approaching fire. The "lower safety zone" was larger. However, given the speed of the approaching fire, there was no way we could make it there before the fire did.

Just when we were ready to commit to this safety zone, the wind shifted to the east and the fire began moving parallel to the line. This wind shift gave us an opportunity to move to the "lower safety zone".

When we got to the "lower safety zone", besides my crew, other resources there were: the Jemez Fire Crew, two dozers with operators, a dozer boss, and Strike Team Leader.

This was not the first time we had retreated to safety zones on this incident. It was commonplace for the fire to become very active around 1400 to 1600 every afternoon. My crew had moved into safety zones—clearings constructed by dozers on the dozer line—at least two times before on this fire.

The dozers were working to enlarge the size of the safety zone. I tried to assist some of the Jemez and Flame-n-Go crew members burning out around the safety zone. I don't remember us having very good success. The line had been prepped—the ladder fuels and most of the dead and down had been removed and hauled to the green side of the line. Ground fuels were mostly grouse whortleberry, green grass, and punky logs.

After a short time, we abandoned the burn and moved into the safety zone.

Grown Complacent

Up until the time we actually deployed shelters, I believed that this safety zone would be large enough to protect us.

I think we had grown somewhat complacent. This was not the first time we had retreated to safety zones on this incident. It was commonplace for the fire to become very active around 1400 to 1600 every afternoon. My crew had moved into safety zones—clearings constructed by dozers on the dozer line—at least two times before on this fire.

On all of these previous events, the safety zones were adequate for the fire behavior we experienced. Therefore—because of these past experiences—we probably discounted the potential fire behavior when we arrived on scene. It was also probably why I waited as long as I did before deploying my shelter.

I was one of the last people to enter a shelter at the "lower safety zone".

Once the fire hit the line there was no question, no options, no alternatives. The flame front was 200 feet to 300 feet—or more—high and extended to the east and west as far as I could see. The line would not hold. There was nowhere else to go. The safety zone would not be adequate.

Once the fire hit the line there was no question, no options, no alternatives. The flame front was 200 feet to 300 feet—or more—high and extended to the east and west as far as I could see.

J. First-Person Account – Surviving in the Hottest Safety Zone

"I thought this was the end and kept praying hard."

[The following is a first-person account from Scott Marlin who was a corrections officer on the Flame-n-Go Type 2 inmate crew. After the Butte Fire entrapment incident, Marlin wrote down his recollections of his actions and observations on the afternoon of Aug. 29.]

1530

We still hadn't received the order to back burn. We—our crew and the Jemez Eagles crew—were then ordered to run up the hill [dozer line] to a safe area that the cats were still clearing about 400 yards up Tin Cup Ridge.

The fire sounded like a train coming in our direction. Due to the height of the timber around us, we couldn't see anything—but we could tell the fire was close. Walking very fast, it took us about eight minutes to get up the hill to the safety area. When we reached this cat line safety area, they were still cutting it.

The minute we arrived at the safety area, I could see this tremendous cloud of fire coming on us fast. The boss on the line yelled in a shaken voice: *"Torch it! Torch it! Fast!"* We all ran as fast as we could to the timber's edge and started lighting it. We lit it amazingly quick and it blew-up fast.

In two more minutes the fire storm was on us. We ran as fast as we could over to the green near the two cats and their drivers. The winds then jumped to about 60 to 70 miles per hour—blowing fire at us. We all pulled our shelters and held them in front of us until the heat and fire became too intense. I lay down under my shelter. The temperature inside my shelter was tremendous. As the temperature rose, the shelter was ballooning away from my body. The inside of my shelter was well lit due to the hundreds of holes in my shelter along its seams and folded portions. The smoke was really thick. My eyes and throat burned. It wasn't easy to breathe. I thought this was the end and kept praying hard.

I kept hearing Ken Dougherty [one of the Flame-n-Go firefighters] yelling to everyone that we were going to be alright. He would yell out each of our names and ask how we were. He continued to talk to everyone through the worst of it. Then I could hear the green on our side of the cat line blowing up. I knew we had to get out in the middle of the cleared area. I then heard Tracy [Tracy Dunford, Flame-n-Go Crew Boss] yell to move to the center of the safe area. We did so.

Evidently, one of the cat drivers didn't get off the cat with a fire shelter. He successfully survived the initial fire blast by staying huddled close to his cat away from the fire. But when the fire started on the other side, he had nowhere to escape the flames and heat. Ken Dougherty saw the cat driver staggering around his cat. He was definitely in trouble. Ken jumped up, ran to the man, and led him away from the fire to the middle area and got him covered.

". . . Ken jumped up, ran to the man, and led him away from the fire to the middle area and got him covered. I can't say enough about Ken's performance. Without a doubt, he saved that man's life."

I can't say enough about Ken's performance. Without a doubt, he saved that man's life. *[Editor's Note: For more post-fire follow-up information, see next page.]*

The winds were still blowing north, blowing the majority of the heat and smoke away from us. But it was still hot enough to cook a hotdog outside our shelters. I could hear Dennis Webb [Flame-n-Go firefighter] panicking and cussing. I looked out to see him thrashing around in his shelter yelling *"Get this m-f-er off me!"*—referring to his shelter. He then calmed down. I didn't hear from him for about another half hour.

1700

At 1700, we were able to get out of our shelters and check each other out. We had a good head count. Everyone was conscious and glad to be alive!

1720

Ken Dougherty said I should go see John Houle [Flame-n-Go firefighter], he didn't look good. His speech was slow and he seemed to be confused. He said his chest and throat hurt and he couldn't breathe too well. He then said he was cold. I had him lay down with his head downhill. We wrapped him with our fire shelters. They called for a chopper and a Med Tech. The Med Tech flew in on a real hairy landing and came down the hill. She checked out John and they put him on one of the cats and drove him out to the top of the hill and choppered him out to the hospital in Salmon for treatment of possible smoke inhalation and heat exhaustion and definite shock.

1830

We started our close check-over of our people. We were all suffering from mild forms of smoke inhalation. Dennis Webb was now having trouble breathing, so was Ken Dougherty. Ken was able to walk out on his own. But Webb was hyperventilating. He was flown out to the medic station in Long Tom.

Inmate rescues man, may get early parole

UTAH STATE PRISON (AP) — An inmate on the Utah State Prison's Flame-In-Go's firefighting team has been credited with saving the life of a bulldozer operator when 40 firefighters were enveloped in a fireball while battling a fire near Salmon, Idaho.

Kenneth Dougherty, 33, Salt Lake City, has been cited by corrections officials and other firefighters for pulling the operator off his bulldozer and covering him with a fire shelter as flames leaped overhead and surrounded a small area in which the firefighters huddled for two hours.

Capt. Gaylen Blackburn, in charge of the prison firefighters, said Monday that all 20 members of the crew were praised for their professionalism not only in that Sept. 5 firestorm but for the 13 days they spent fighting the blaze.

Dougherty has a parole date for July 1986, but officials are preparing papers for submission to the Board of Pardons recommending an earlier release for his heroic efforts, Blackburn said.

Dougherty is serving five years to life for aggravated robbery.

National Forest Fire Management Service officials told Blackburn the firestorm, which occurred as crews were attempting to start a backfire, reached 450 feet high as 70-foot-tall lodgepole pines exploded, creating intense heat.

Correctional Officer Scott Malin, who directed the crew, said Dougherty ran 30 yards to pull the bulldozer operator off his machine in the middle of the firestorm. He was able to get the fire shelter — a small aluminum and nylon tent that firefighters use to protect themselves in such situations — out of the operator's hand, cover him with it and help him back to the center of the safe area.

"Without a doubt, Ken saved that man's life," Malin said.

"We were just swallowed in the middle of a big ball of fire and I think the operator was overcome by smoke and became disoriented," Dougherty said.

"I was lying next to the fire boss who was trying to shout to him, but it was impossible to be heard more than a few feet because of the noise of the fire.

"I thought one of us had to go out and get him so I got up and ran," he said.

"I thought one of us had to go out and get him—so I got up and ran."

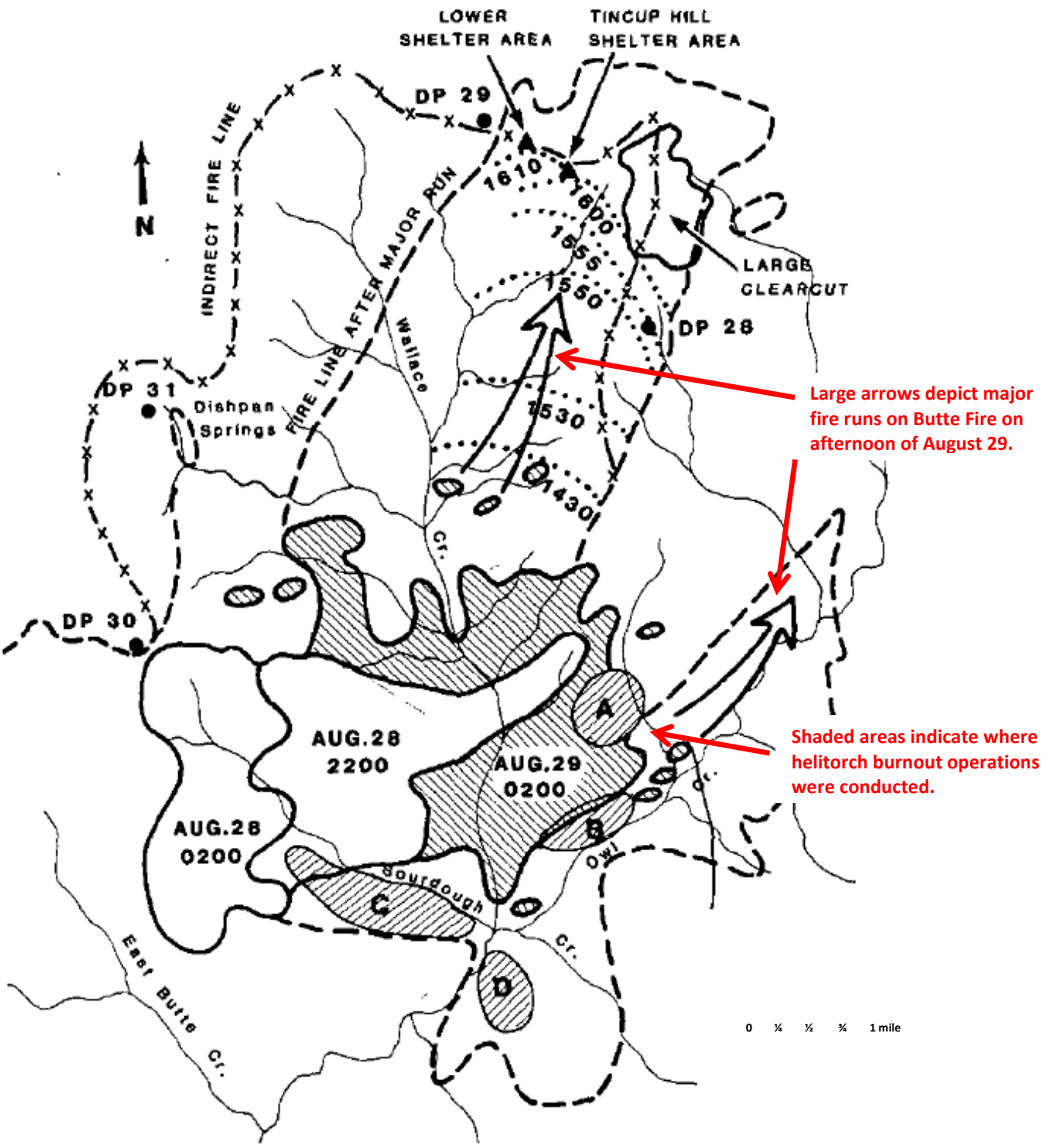
Ken Dougherty
Flame-N-Go Crew Member

Inmate Firefighter Dougherty's 'Heroic Actions' Merit a Recommendation for Early Release from Prison

As documented in this Sept. 18, 1985 article in the *Deseret News* (above), due to his "heroic actions" for coming to the rescue of an entrapped, disoriented dozer operator during the Butte Fire crown run, Flame-N-Go inmate firefighter Ken Dougherty was recommended for early release from the Utah State Prison. (Read more about Dougherty's Butte Fire actions on the previous page.)

Dougherty, serving a five year to life sentence for aggravated robbery, had a parole date set for July of the next year.

However, as pointed out in the *Deseret News* article, after learning how he risked his own welfare to save the dozer operator from the fire front, prison officials were recommending an earlier release date for Dougherty to the Board of Parole.



This map represents Figure 1 from Richard C. Rothermel and Robert W. Mutch's article "Behavior of the Life-Threatening Butte Fire: August 27-29" that appeared in *Fire Management Today* in 1986 and was reprinted in the publication in 2003.

http://www.fs.fed.us/fire/fmt/fmt_pdfs/fmt63-4.pdf

"When the fire made its big run—which caught us all by surprise—it traveled approximately two miles in 15 minutes.

By the time we knew we had a problem, it was too late to move anybody. The only chance they had was to move into the safety zones on the ridge that were built with the tractors.

The fire had to be very intense. It burned the handles out of the shovels that were lying beside the shelters there in the safety zones."

Bill Williams
Operations Section Chief
in 1985 on the Butte Fire

On August 29 when the fire made its run up Wallace Creek drainage, it also ran up Owl Creek drainage, located just east of Wallace Creek. By midafternoon, both columns were characterized by dense black smoke and firm cumulus caps. Column heights were estimated at 15,000 to 17,000 feet above the terrain.

"The heat was extreme. It was unbelievable. The wind felt like it had to be from 100 to 80 miles per hour.

There was a lot of screaming from inside the fire shelters: 'We're gonna make it!'.

It was pretty bad in there."

Eddie Abeyta, Crew Liaison Officer
Jemez Eagles Fire Crew
in 1985 on the Butte Fire

"When we were in our shelters for the initial burn, there was no conversation at all. Then, when things calmed down a bit, the Carson crew started talking. Then everybody started talking.

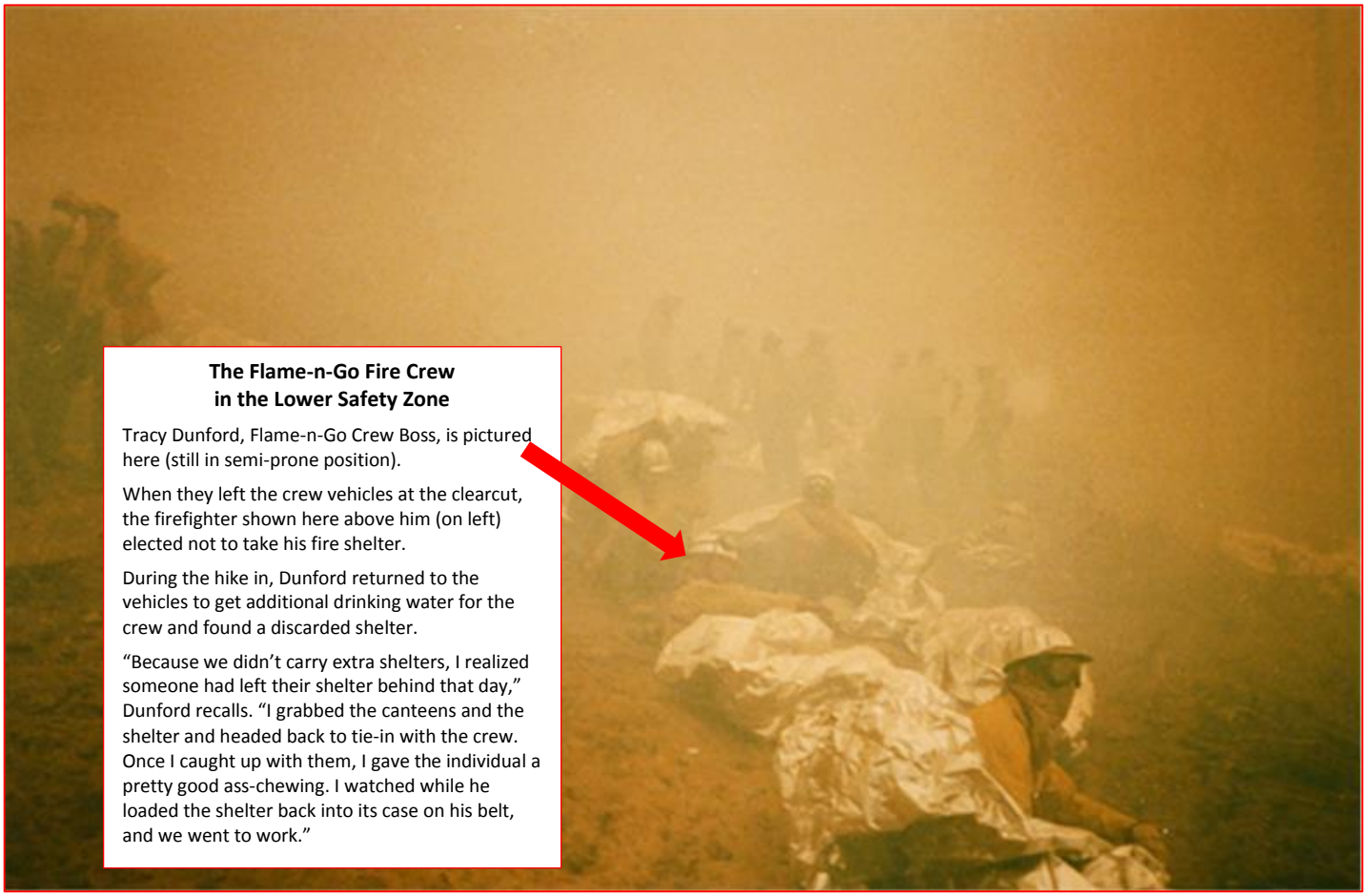
That seemed to help matters out a lot—to know that you weren't alone out there."

Jack Ebberts
Strike Team Leader
in 1985 on the Butte Fire

"While in the shelter you can expect winds in the 40 to 50 mile an hour range. While we were in there, it did get hot. Gloves were a necessity for being able to hold the sides of the shelter down.

In strong winds the shelter's going to flap. It's going to come down and hit your head and back."

Jim Steele
Division Supervisor
in 1985 on the Butte Fire



The Flame-n-Go Fire Crew in the Lower Safety Zone

Tracy Dunford, Flame-n-Go Crew Boss, is pictured here (still in semi-prone position).

When they left the crew vehicles at the clearcut, the firefighter shown here above him (on left) elected not to take his fire shelter.

During the hike in, Dunford returned to the vehicles to get additional drinking water for the crew and found a discarded shelter.

"Because we didn't carry extra shelters, I realized someone had left their shelter behind that day," Dunford recalls. "I grabbed the canteens and the shelter and headed back to tie-in with the crew. Once I caught up with them, I gave the individual a pretty good ass-chewing. I watched while he loaded the shelter back into its case on his belt, and we went to work."

"The last thing I remember seeing before I went into my shelter was a wall of flame across the cat line as far as I could see either way—from 200 to 300 feet high. All you could see was flame.

You could look out underneath your shelter and it was just a bright red glow. When it started getting extremely hot, the fire would change from an orange glow to a bright, intense red.

All you could do was just lay there and try to hold the shelter down.

The smoke inside the shelter at that time started getting bad. I could hear guys yelling that there were holes in their shelters and they were having trouble breathing."

Tracy Dunford, Crew Boss
Flame-n-Go Fire Crew
in 1985 on the Butte Fire

"When I landed the smoke was still very thick. I had trouble seeing and breathing myself just getting down there.

The gentleman who was having the difficulties was in good hands. They did good first aid. I had Mike Parsons off the Carson Hotshots, who was an EMT, fly with the gentleman in the helicopter. First, we had to load him onto the cat and take him up the hill to where the helicopters were located.

Due to the carbon monoxide and smoke, some personnel were having some shortness of breath . . . We made a very slow walk out along the cat line down to the drop point. At that time, I discovered that I had about three more personnel who were having some problems. Along the way, I did have to administer oxygen to quite a few personnel.

Mainly, it was just keeping everybody in good spirits. They were talking and laughing a lot and were pretty glad to be alive."

Jan Henderson
Medical Unit Leader
in 1985 on the Butte Fire

1700 to 1755 Hours

The Butte Fire was fortunate to have the services of Jan Henderson who was able to perform preventive actions as well as treating injuries. Ms. Henderson also established a network of crew medics who could keep her advised of the crews' physical condition.

Long Tom Complex Fire Review
January 1986

The entrapments for the 73 people who deployed their shelters lasted approximately one and ½ hours.

Five firefighters were hospitalized overnight for heat exhaustion, smoke inhalation, and dehydration.

Tracy Dunford, Flame-n-Go Crew Boss, told investigators that he believed the fire shelters saved all of their lives. They had no escape alternative. Likewise, Eddie Abeyta, the Crew Liaison Officer for the Jemez Eagles Fire Crew, believed none of the 43 people entrapped in the lower safety zone would have survived without fire shelters.

A Squad Boss on the Carson Hotshot Crew, who deployed in the larger Tin Cup Hill safety zone, told investigators that—without fire shelters—he estimated their mortality rate might have been 75 percent.

Investigators estimated that without the protection of the escape zones and fire shelters, at least 60 of the 73 firefighters would have died.

K. Post Entrapment

Plans wanted these firefighters [the people who had been entrapped and survived the fire shelter deployment incident the previous day] back on the line the next day.

No one was in camp to meet these crews when they returned from the medical screening. In fact, the camp had been moved, their personal gear was scattered, and only rations were available for food.

Long Tom Complex Fire Review
January 1986

Issue #10 from the Long Tom Complex Fire Review:

"Inadequate attention and follow-up were given to the personnel who were burned over in the shelter deployment incident."

The Long Tom Complex Fire Review, published four months after the entrapment incident, noted that these crews had been through a "traumatic emotional experience" and yet no one monitored them during the next few days to determine if they had any after-effects or had obtained adequate rest. "They did experience difficulty sleeping and encountered extreme fatigue when they returned to the fireline," the review points out. (According to the review, the Medical Unit Leader recommended additional rest and medical attention for six specific people.)

"Under these circumstances," the review stated, "it is also likely to experience abnormal levels of carbon monoxide in the blood which could impair thought processes."

The Long and Active 1985 Fire Season Took Its Toll on Firefighters

Issue #8 from the Long Tom Complex Fire Review:

"Tired crews reduced productivity, created morale problems, and contributed to the accident rate."

The Long Tom Complex Fire Review pointed out:

- Many crews assigned to the Butte Fire had been working on fires for 42 of the past 50 days.
- Crews were arriving on the Butte Fire in a fatigued condition. Some drove from previous fires with no rest in between.
- Crews were also arriving with active cases of poison oak/ivy and other illnesses.

Fire front approaches the clearcut safety zone. "In-draft winds were pretty strong at this point," says Steve Karkanen, who took this photo. "We all retreated farther uphill and used the dozer to scrape an area clear of vegetation for us. With the dozer, a water tender, and Type 5 engine with us, we were confident that we were in the best possible location."

The Butte Fire Experience 'Destroyed' Many Fire Careers

By Jim Steele

Division A Supervisor on the Butte Fire

What I find truly interesting is the fire culture paradox that exists today compared to 1985.

We participated in two reviews. The first was the "Bob Mutch group" *[who put together the September 1985 "Fire Entrapment Incident, Butte Fire" Report]*. We *[Division A]* spoke with Art Jukkala [of the Missoula Equipment and Development Center] regarding the performance of the fire shelters. He stressed the point that he was fact-finding regarding fire shelters.

During this discussion, people would consistently revert to questions of "why and how" regarding the Butte Fire and the IMT. There was anger, frustration, and disbelief. Nonetheless, Art continued to try to keep us on task: Focusing on "the fire shelters".

During this discussion, people would consistently revert to questions of "why and how" regarding the Butte Fire and the IMT. There was anger, frustration, and disbelief.

The second was the Jerry Monesmith review. *[The January 1986 "Long Tom Complex Fire Review" whose review team leader was Monesmith, the Safety and Training Officer for the Forest Service's Fire and Aviation Management Program's National Office].* Jerry rode with me to my Division and we discussed the Ten Standard Orders and Thirteen Situations That Shout Watch Out[1]. Again, this inquiry had a very specific agenda that had nothing to do with how people were following the burnover.

In addition, the shelter deployment overshadowed other close encounters such as Dozer Operators surrounded by fire being plucked out of harm's way by a helicopter and gutsy pilot. A crew deciding to run for safety rather than deploy their shelters ran off the ridge to an escape route which was a road. They finished their run to safety bent over with fire shooting over their backs. Overhead, crews, and equipment operators watched the burnover on Tin Cup Ridge from Hill 8010. They were preparing to deploy their shelters. A little more fire intensity to the west could have invited the fire to burn up the west fork of Wallace Creek and to them. They continued to improve their position as the burnover occurred. Payson and Flagstaff hotshots were flown out of the large clearcut at dusk to Sourdough Camp. The last crew members were picked up in the dark—pilots were landing using experience and instruments.

At no time did anyone—then or later—inquire into the effects of this experience on firefighters. The few Butte Fire people I have tracked down have all indicated how this incident had profound negative impacts on their lives.

At no time did anyone—then or later—inquire into the effects of this experience on firefighters. The few Butte Fire people I have tracked down have all indicated how this incident had profound negative impacts on their lives. The initial report that was published within a few days of the deployment mentioned the potential for Post Traumatic Stress Disorder.

The Butte Fire experience and its aftermath destroyed many careers in fire. Several people abandoned participating in fire altogether.

Who knows the impacts to their personal lives?

[1] "The 13 Situations That Shout Watch Out" were in effect through 1987, when this list increased to "The 18 Situations That Shout Watch Out".

We've Come a Long Way Since 1985

By Tracy Dunford

Crew Boss, Flame'n'Go Fire Crew, on the Butte Fire

When I talk to firefighters, especially new firefighters, about this incident I like to focus on improvements that have been made to the wildland firefighting culture/community since 1985 when the Butte Fire occurred.

I think there are lessons to be learned and valuable discussion to be had, especially on two key topics: the refusal of risk protocol and critical incident follow-up.

Refused Assignment

The Payson and Flagstaff hotshot crews refused the assignment that day based on good situational awareness, evaluation of environmental conditions, and risk management *[see page 17]*. They made the right call and retreated to an adequate safety zone.

While there are valuable lessons to be learned from the performance of the fire shelter on this incident, it is more important to point out that these two crews did not have to resort to this "last option". At the time, there was no protocol for refusing an assignment based on safety concerns. To do so was at least culturally awkward and, at most, professionally risky. Events like this have changed this paradigm. Today, every individual is encouraged to speak up if they see a problem; supervisors are encouraged to listen. New firefighters should be familiar with this process and be prepared to use it if needed.

At the time, there was no protocol for refusing an assignment based on safety concerns. To do so was at least culturally awkward and, at most, professionally risky.

Important to Note How People were Managed After This Entrapment

It is also important—once again, especially for today's new firefighters—to look at how the people were managed following this incident.

We had all experienced what most would consider a traumatic event. Once we finally made it off the line we learned that our spike camp had been evacuated—along with all of our gear. Everything had been moved to a new location.

It was a very late night getting people taken care of, fed, and locating all of our gear.

Originally, we were on the plan for the next operational period. However, someone in the planning section suggested that—given our circumstances—some rest was in order for our crew and for everyone who had been entrapped. We were given a day off in camp and went back to work the following day.

This type of treatment would be considered unacceptable today. I think we are much better at accepting that events like this can have an adverse effect on people and organizations. We have better tools and procedures to manage the outcomes from events like this and we are better at recognizing when to use them.

Complacency Contributed to this Incident

I think complacency is another factor that contributed to this incident.

As I previously pointed out *[see page 20]*, during the previous days on this incident, it was commonplace for fire activity to increase significantly in the afternoon. I believe we became somewhat desensitized by the regularity of these events.

When the fire activity picked up, resources retreated or moved to safety zones. We would then regroup and pick the fire up on the next ridge the following day. It was all kind of predictable. But rather than plan and act on this predictability, everyone seemed to drop their collective guard.

Base all actions on current and expected behavior of the fire.

L. Butte Fire Entrapment Incident Helps Promote the Benefits—and Improvement Needs—of Fire Shelters

"We estimate that the fire shelter has saved more than 140 lives since its introduction in the early 1960s. The main reason the fire shelter saves lives is because it gives firefighters a way to protect face and airways. Breathing flames and hot gases is the greatest hazard in fire entrapment; thus protecting face and airways is vital. This cannot be stressed enough."

"We also believe the more you know about the fire shelter, the more confidence you'll have in it, and the better prepared you'll be to stay put in your shelter should you ever become entrapped."

"We have learned a lot from our investigation of the Butte Fire entrapments and want firefighters to know about the role the fire shelter played and how they can increase their chance of survival."

"Forest Fire Shelters Save Lives" article by Art Jukkala and Ted Putnam that appeared in *Fire Management Today* in 1986: http://www.fs.fed.us/fire/fmt/fmt_pdfs/047_02.pdf

"Recommendation: A development project be financed, if feasible, in Fiscal Year 1986, to further improve the fire shelter. There is no way to be certain of the number of lives saved in this incident. According to crew boss and fire overhead reports, as many as 60 lives might have been saved. The shelter clearly demonstrated its value in this and other recent incidents. However, investigation of this incident, together with other known problems, reinforces the need for development work to further improve the shelter."

"Fire Entrapment Incident, Butte Fire" Report September 1985

Fire Shelter History Status in 1985

1958 – Australians begin work on fire shelter.

1959 – U.S. Forest Service's Missoula Equipment Development Center (today's Missoula Technology and Development Center [MTDC]) starts shelter development.

1967 – Forest Service makes first large purchase of 6,000 shelters. An A-frame design, with aluminum foil and glass cloth, and Kraft paper barrier inner liner—a 4.3 lbs., 14"x 6"x 3" package. This shelter has an orange case and attached belt for carrying.

1974 – The Kraft paper is eliminated.

1977 – After three fatalities occur in the previous year's Battlement Creek Fire, the Forest Service makes carrying a shelter mandatory.

1984 – "Your Fire Shelter" is published by the Missoula Equipment Development Center. This publication contains the most up-to-date information on fire shelter use and inspection, including deploying your shelter and the care and handling of your shelter.

1985 – The Missoula Equipment Development Center is in the process of updating the 16 mm film on the use of the fire shelter.

1980s – A toxicity test is added to test specification. Shelter is folded differently with a new 9"x 5¾'' x 3" package. New yellow nylon case is introduced. Hold-down flaps are added, along with a hard plastic case to improve durability.

"Steps need to be taken to ensure that contract sawyers, dozer operators, National Guard truck drivers, and others who are required to carry them, know how to deploy and use the fire shelter."

"Fire Entrapment Incident, Butte Fire" Report September 1985

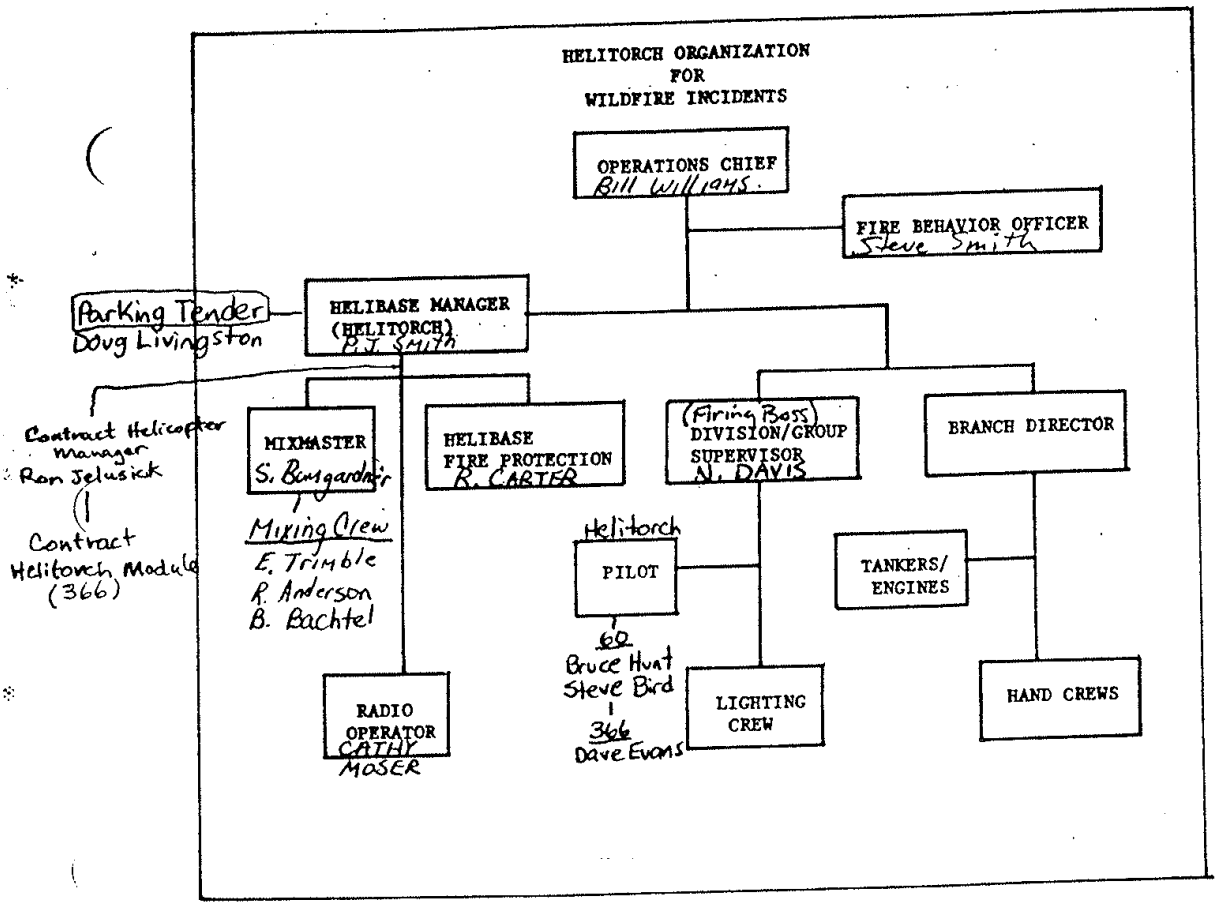
M. The Helitorch Operation

Helitorch Objective

"The helitorch will be used to center fire a backburn in Wallace Creek and main Owl Creek. The burn is to be completed in stages. The center firing technique is intended to create a draft and draw fire ignited along the fire lines. Firing operations will be needed on approximately 2,000 to 3,000 acres."

HELICOPTER OPERATIONS HANDBOOK

*-Exhibit 1



The Helitorch Organization for August 29, 1985.

Helitorch Operation Narrative

[The following information is from the August 30, 1985 Fire Behavior Summary report written by Stephen B. Smith, Fire Behavior Analyst.]

The main objective of the helitorch operation was to secure the south boundary of the Sourdough Fire at the junction of Wallace and Owl creeks.

After a helitorch briefing was held, a recon flight was made of the area to be burned. Firing locations were selected.

Actual firing began at 1305. At 7,500 feet, temperatures were 62 degrees, relative humidity was 27 percent, winds were 2-6 mph with gusts to 10 mph.

Firing started about ½ mile inside the burn to create a heat source. Two to three buckets of fuel were used without significant success.

The line was then directly fired on the east side of Wallace Creek, starting approximately ½ mile west of the bottom of Owl Creek—firing east along the line into the bottom of Owl Creek.

During this time, crowning was observed on the east side of Wallace Creek within the burn perimeter.

After the west side of Wallace Creek was ignited, a fire was in the process of crowning on the slope located south of Owl Creek. This created a heat source that allowed the east side to be fired.

The east side of Owl Creek was then fired from the bottom of a clearcut into the Owl Creek drainage. As planned, winds from the south pushed the fire away from the fire line toward the north.

Burning operations were completed at approximately 1645. At this time, radio reports were received that crews were in trouble in Divisions A, B, V, F. The prescribed [helitorch] fire was then burning along Division line C and D in Owl Creek.

Heat from this source appeared to be joining with a fire in Division E that had jumped the line near Drop Point 30. After this fire near Drop Point 30 blew-up it jumped back across the line into the fire below Dishpan Springs. This developed into a fire storm and rapidly proceeded over the North Ridge.

Helitorch History Status in 1985

The first "Flying Drip Torch" (helitorch) prototype was developed during the summer of 1973 by John Muraro, Research Scientist in the Fire Research Group at the Canadian Forestry Service, Pacific Forest Research Centre in Victoria, B.C.

Helitorch operations began on the Gifford Pinchot National Forest in the U.S. Forest Service's Region Six in 1975.

A 1983 paper "Prescribed Burning for Habitat Improvement Using the Helitorch" by Scott R. Florence, Wildlife and Fire Management Specialist, U.S. Bureau of Land Management, in Hollister, Calif., refers to the helitorch as *"an example of the new technology . . . available for use in prescribed burning. This device offers greater mobility and effectiveness than traditional firing methods, plus fewer safety hazards associated with actual firing operations."*

The paper concludes: *"As more and more people are trained in the use of the helitorch, as new methods such as closing mixing systems become more common, and as agencies develop the confidence to reduce the cumbersome organizational requirements, the helitorch will become a safer and more flexible tool."*

Did the Helitorch Operation Contribute to the High-Intensity Fire Run Up Wallace Creek?

"The question arose as to whether the burnout operation with the helitorch on the south side of the fire directly accelerated the high-intensity run up Wallace Creek. Interviews, combined with a careful inspection of burning patterns on a 1/24,000 aerial photo mosaic, did not reveal any fire behavior process whereby the helitorch burnout could have accelerated the run up Wallace Creek.

The photo mosaic showed a patchy pattern of burned and unburned areas between the helitorch burning at the confluence of Wallace and Owl creeks and upper Wallace Creek.

The burnout operation, however, probably contributed to the shelter incident by preoccupying the attention of some key overhead personnel for so much of the afternoon of August 29. The "eyes in the sky" reconnaissance that had been routinely available on previous days was not available during the critical time on August 29."

From Richard C. Rothermel and Robert W. Mutch's article "Behavior of the Life-Threatening Butte Fire: August 27-29" that appeared in *Fire Management Today* in 1986 and was reprinted in the publication in 2003.
http://www.fs.fed.us/fire/fmt/fmt_pdfs/fmt63-4.pdf

"Since August 29 [1985], I have observed the burn area, both from the air and from several ground locations. It appears that the columns in Sections 2 and 3 interacted, creating the fire storm that overran the line where crews were in their fire shelters.

Because of unburned areas between the main run and the helitorch operation, it appears that the helitorch burn had little if any effect on the main run."

Vernon R. McKenzie, Branch Director
East Owl Branch, Butte Fire
[From his written statement he submitted after the fire]

N. References

- Long Tom Complex Fire Review, January 1986
- "Fire Entrapment Incident, Butte Fire" Report, September 1985

  http://bit.ly/ButteFireReports

- Richard C. Rothermel and Robert W. Mutch's article "Behavior of the Life-Threatening Butte Fire: August 27-29" that appeared in *Fire Management Today* in 1986 and was reprinted in the publication in 2003.

  http://www.fs.fed.us/fire/fmt/fmt_pdfs/fmt63-4.pdf

- Art Jukkala and Ted Putnam's article "Forest Fire Shelters Save Lives" that appeared in *Fire Management Today* in 1986.

  http://www.fs.fed.us/fire/fmt/fmt_pdfs/047_02.pdf

- Lake Mountain Incident Fire Shelter Deployment Report, 1985
- Fire Shelter Deployment, Lake Mountain Fire, 1985

  http://bit.ly/LakeMntReports

Several Butte Fire related reference documents and photographs were supplied by the Salmon-Challis National Forest.

Long Tom Complex

Day Shift Plan

Aug. 29, 1985

LONG TOM COMPLEX

+ SALMON NF +

INCIDENT OBJECTIVES

1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
East Owl Creek Sourdough Creek	8/28/85	2300

4. OPERATIONAL PERIOD (DATE/TIME) 8/29 Day Shift

5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)

East Owl Cr. Fire – Continue to give priority to containment of this fire. Objectives, strategy, and resources will be the same as 8/27 and 8/28.

Sourdough Fire – For the second day in a row, the fire made a major run outside of planned control lines during the afternoon. Progress of the fire into the main Owl Creek drainage significantly increases its potential for extreme size, damage to resources, and control cost and complexity. Indirect control will be employed to confine the fire to the Wallace Cr. and Cow Cr. drainages. This will result in closure of the Ridge Road.

A. Complete dozer line around the head of Wallace Creek. Burn out all of Wallace Cr. within control lines.

B. Improve line and burnout along Beartrap Ridge as needed for confinement to Owl Cr.

C. Construct no new control lines from Tincup Hill to Bluenose.

D. Protect personnel and facilities at Beartrap Camp.

Helitorch objectives for this shift are attached as a part of this plan.

6. WEATHER FORECAST FOR OPERATIONAL PERIOD

See attached forecast.

7. GENERAL/SAFETY MESSAGE

See attached safety message.

8. ATTACHMENTS (✓ IF ATTACHED) Helicopters are available for bucket drops. Retardant bucket drops available after 1100. All air tanker orders to be made through Operations Chief.

- ☑ ORGANIZATION LIST (ICS 203)
- ☑ DIVISION ASSIGNMENT LISTS (ICS 204)
- ☑ COMMUNICATIONS PLAN (ICS 205)
- ☑ MEDICAL PLAN (ICS 206)
- ☑ INCIDENT MAP
- ☐ TRAFFIC PLAN
- ☐ _____
- ☑ HELITORCH OBJECTIVES
- ☐ _____

202 ICS 3/80	9. PREPARED BY (PLANNING SECTION CHIEF)	10. APPROVED BY (INCIDENT COMMANDER)

NFES 1326

ORGANIZATION ASSIGNMENT LIST

1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED
Long-term	8/28/85	1000

4. OPERATIONAL PERIOD (DATE/TIME): 8/29/85 0600 - 1800

POSITION	NAME
5. INCIDENT COMMANDER AND STAFF	
INCIDENT COMMANDER	Gene Benedict
DEPUTY	
SAFETY OFFICER	Lou Workart
INFORMATION OFFICER	Dixie Davis
LIAISON OFFICER	
6. AGENCY REPRESENTATIVES	
AGENCY	NAME
R3-RLO	R Ligon
7. PLANNING SECTION	
CHIEF	John Combs
DEPUTY	
RESOURCES UNIT	Jack Smith
SITUATION UNIT	Jim Ragland
DOCUMENTATION UNIT	Joe Leaf
DEMOBILIZATION UNIT	
TECHNICAL SPECIALISTS	
8. LOGISTICS SECTION	
CHIEF	Gail Herriman
DEPUTY	John Nelson
a. SUPPORT BRANCH	
DIRECTOR	
SUPPLY UNIT	Spencer
FACILITIES UNIT	Rosencrance/Pollack
GROUND SUPPORT UNIT	Merrill/Allred
b. SERVICE BRANCH	
DIRECTOR	
COMMUNICATIONS UNIT	Mc Laymon
MEDICAL UNIT	Dan Henderson
FOOD UNIT	

9. OPERATIONS SECTION		
CHIEF		Bill Williams
DEPUTY		Les Tschetl
a. BRANCH I — DIVISIONS/GROUPS		
BRANCH DIRECTOR		D Schindler
DEPUTY		
DIVISION/GROUP	A	Mc Steele
DIVISION/GROUP	B	Mc Roose
DIVISION/GROUP	C	Mc Broberg
DIVISION/GROUP		
DIVISION/GROUP		
b. BRANCH II — DIVISIONS/GROUPS		
BRANCH DIRECTOR		D Schan
DEPUTY		
DIVISION/GROUP	D	Mc Morris
DIVISION/GROUP	E	Gary ORR
DIVISION/GROUP	F	Jim Finley
DIVISION/GROUP		
DIVISION/GROUP		
c. BRANCH III — DIVISIONS/GROUPS		
BRANCH DIRECTOR		B Mckenzie
DEPUTY		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
DIVISION/GROUP		
d. AIR OPERATIONS BRANCH		
AIR OPERATIONS BR. DIR.		Mc Solecki
AIR ATTACK SUPERVISOR		Mc Davis
AIR SUPPORT SUPERVISOR		Bustrynski
HELICOPTER COORDINATOR		
AIR TANKER COORDINATOR		
10. FINANCE SECTION		
CHIEF		Harvey Gouse
DEPUTY		Pam Watzenick
TIME UNIT		Maria Starr
PROCUREMENT UNIT		Tim Johnson
COMPENSATION/CLAIMS UNIT		Lisa Parks
COST UNIT		

PREPARED BY (RESOURCES UNIT)

DIVISION ASSIGNMENT LIST

1. BRANCH: I
2. DIVISION/GROUP: A
3. INCIDENT NAME: Long Tom
4. OPERATIONAL PERIOD: DATE 8/29/85 TIME 0800 - 1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: Bill Williams
DIVISION/GROUP SUPERVISOR: Jon Steele
BRANCH DIRECTOR: D Schendel
AIR ATTACK SUPERVISOR NO.: N. Davis

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
Lolo 750 gal #8116 E42	Potter	3	NO	DP 28 @ 0800	DP 28 @ 2000
Lolo 1000 gal #8592 E31	Dougarty	3	NO	Same	Same
Water tenders	2 contracted		NO	Same	Same
Eng. S/T Leader	Le Sears			Same	Same
2 dozers D-8 D-6			Yes	Same	Same
Poyson HS, Flagstaff IR Carson HS		60	Yes	Same	Same
Crew S/T Leader	V. Ebbetts	1	Yes	Same	Same
Dozers S/T Leader	Ralphs	1	Yes	Same	Same

7. CONTROL OPERATIONS

Complete burn out and hold.

8. SPECIAL INSTRUCTIONS

Toiyabe engine strike team with Leader (Harry Hood) assigned to Branch Director
tooled 50-5C, Lip Torches fusees.
One set of fallers.

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				STATUS/ LOGISTICS	LOCAL			
	REPEAT	See Comm Plan				REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.)

APPROVED BY (PLANNING SECT. CH.): JC Combs

DATE: 8-28-85

TIME: 2400

204 ICS 1/82

DIVISION ASSIGNMENT LIST

1. BRANCH	2. DIVISION/GROUP
I	B

3. INCIDENT NAME: LONG TOM

4. OPERATIONAL PERIOD
DATE 8/29/85
TIME 0800 - 2000

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: Bill Williams
DIVISION/GROUP SUPERVISOR: Howard Roose
BRANCH DIRECTOR: D. Schindler
AIR ATTACK SUPERVISOR NO.: No Davis

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
Utaho State (352)	MORLIN	3	Y	As directed by Branch director. @ 0800	assigned by Branch Director 2000
4x4 300 engine				"	"
Engine S/T Leader	Ro Yacomella		Y	"	"
Jomez	G. TOYA	22	Y	"	"
FLAMINGO	T. DUNFORD	2		"	"
2 DOZERS				"	"
DOZER BOSS	STANNICH,		Y	"	"
FIELD OBS.	KENNELL & WIEGAND		Y	"	"

7. CONTROL OPERATIONS

NO ACTION ON AREA BETWEEN BLUE NOSE & DIV. A. LIMITED ACTION BETWEEN BLUE NOSE AND DIV. C. PROTECT SPIKE CAMP!

8. SPECIAL INSTRUCTIONS

1 set of Fallers & Beaver - TOOLED 60/50, FUSEES, DRIP TORCHES, & FUEL

FIELD OBS, SPLIT UP AND RECON DIVISIONS A, B, & C, EVALUATE LINE LOCATION, OLD LINE, AND SEARCH FOR WATER SOURCE'S WHICH MAY BE USED FOR ANY PURPOSE, DEBRIEF DIV-SUP AND RETURN TO SOURDOUGH BY 1800.

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL		Comm plan		STATUS/ LOGISTICS	LOCAL			
	REPEAT					REPEAT			
DIV./GROUP TACTICAL		See			GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.)

APPROVED BY (PLANNING SECT. CH.): [signature]

DATE: 8-29-85

TIME: 2400

DIVISION ASSIGNMENT LIST

1. BRANCH: I
2. DIVISION/GROUP: C
3. INCIDENT NAME: LONG TOM COMPLEX
4. OPERATIONAL PERIOD
DATE: 8-29-85
TIME: 0600-1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: Bill Williams
DIVISION/GROUP SUPERVISOR: DAVID BROBERG
BRANCH DIRECTOR: DAN SCHINDLER
AIR ATTACK SUPERVISOR NO.: NEAL DAVIS

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
Replacement crew for jumpers - Cat. 1				AS DIRECTED BY BRANCH DIRECTOR. 0800	AS DIRECTED BY BRANCH DIRECTOR 0800
DOZER				AS DIRECTED BY BRANCH DIRECTOR. 0800	AS DIRECTED BY BRANCH DIRECTOR. 0800

7. CONTROL OPERATIONS

BE PREPARED TO BURN OUT DOZER LINE IF FIRE MAKES A RUN AT THE LINE.

COORDINATE ANY BURNOUT WITH THE OPS CHIEF.

8. SPECIAL INSTRUCTIONS

TOOLED 50/50, DRIP TORCHES, FUEL & FUSEES.

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL		Plan		STATUS/ LOGISTICS	LOCAL			
	REPEAT	See Comm				REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.)

APPROVED BY (PLANNING SECT. CH.)

DATE: 8-27-85

TIME: 2400

204 ICS 1/82

DIVISION ASSIGNMENT LIST

1. BRANCH: II
2. DIVISION/GROUP: D
3. INCIDENT NAME: Long Tom
4. OPERATIONAL PERIOD: DATE 8/29/85 TIME 0600 - 1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: Bill Williams
DIVISION/GROUP SUPERVISOR: Mc Morris
BRANCH DIRECTOR: D Schan
AIR ATTACK SUPERVISOR NO.: No Davis

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
Smokey Bear HS	G Grime	18	Y	DP 23 @ 0600	DP 23 @ 1800
Weber Basin Job Corps	So Layton	20	Y	Same	Same
Crew S/T Leader	D. Baker	1	Y	Same	Same
1 set of fallers	J Smith	2	Y	Same	Same

7. CONTROL OPERATIONS

Hold and Mop up from end of hand line from Owl Creek to the Long Tom Ridge road. TRY to Hold Cat line into Owl Creek

8. SPECIAL INSTRUCTIONS

tool 50-50, drip torch, fuel, fusees

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL		Plan		STATUS/ LOGISTICS	LOCAL			
	REPEAT	See Comm				REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.):
APPROVED BY (PLANNING SECT. CH.): JLCombs
DATE: 8-28-85
TIME: 24m

204 ICS 1/82

DIVISION ASSIGNMENT LIST

1. BRANCH	2. DIVISION/GROUP
II	E

3. INCIDENT NAME: Long Tom

4. OPERATIONAL PERIOD
DATE: 8/29/85
TIME: 0600 - 1800

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: Bill Williams
DIVISION/GROUP SUPERVISOR: Gary Orr
BRANCH DIRECTOR: D. Schaar
AIR ATTACK SUPERVISOR NO.: Ne Davis

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
BIA (1000gal)	McClure	3	Y	DP 30 @ 0600	DP 30 @ 1800
St Maries #8024	Wing	3	Y		
Clearwater #8047	Elliot	3	Y		
Engo S/T Loader	Tidwell	1	Y		
Wallowa Whitman 4474	Coley	3	Y		
Malheur	Walker	2	Y		
Water tenders (2)		2	N		
1 Dozer with S/T Loader	Handcock	2	Y	V	V
~~7. CONTROL OPERATIONS~~ Mormon Lake HS	D. Jones	20	Y		

Complete Burnout and Hold - Protect structure at mine - Use Dozer on spots and Slop-over

8. SPECIAL INSTRUCTIONS
tool 50-50, drip torches, fuel & fusee

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL		See Comm Plan		STATUS/ LOGISTICS	LOCAL			
	REPEAT					REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.)
APPROVED BY (PLANNING SECT. CH.)
DATE: 8-29-85
TIME: 0500

1. BRANCH: II

2. DIVISION/GROUP: F

DIVISION ASSIGNMENT LIST

3. INCIDENT NAME: Long Tom

4. OPERATIONAL PERIOD
DATE: 8/29
TIME: 0800 - 2000

5. OPERATIONS PERSONNEL

OPERATIONS CHIEF: Bill Williams

DIVISION/GROUP SUPERVISOR: Jim Funky

BRANCH DIRECTOR: D Schaer

AIR ATTACK SUPERVISOR NO.: N. Davis

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
2 Engines		6		DP - 29 @ 0800	DP - 29 @ 2000
2 dozers				″	″
Sula Rego	C. Wofford	20	Y	″	″
Replacement for Mc Call jumpers (cat 1)				✓	✓

7. CONTROL OPERATIONS
Complete Burn out and Hold – Use Dozers on spots and Skip over

8. SPECIAL INSTRUCTIONS
2 Engine have not cleared Plains – Please get these names to Plans
2 Dozer please I.D. and inform plans
Replacement crew please I.D. and inform plans

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				STATUS/ LOGISTICS	LOCAL			
	REPEAT	see Comm Plan				REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.)

APPROVED BY (PLANNING SECT. CH.)

DATE

TIME

204 ICS 1/82

DIVISION ASSIGNMENT LIST

1. BRANCH: III
2. DIVISION/GROUP:
3. INCIDENT NAME: LONG TOM COMPLEX
4. OPERATIONAL PERIOD: DATE 8-29-85; TIME 0600 – 1800
5. OPERATIONS PERSONNEL
OPERATIONS CHIEF: BILL WILLIAMS
DIVISION/GROUP SUPERVISOR:
BRANCH DIRECTOR: BOB McKENZIE
AIR ATTACK SUPERVISOR NO.: NEAL DAVIS

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE/ RESOURCE DESIGNATOR	LEADER	NUMBER PERSONS	TRANS. NEEDED	DROP OFF PT./TIME	PICK UP PT./TIME
BOISE I.R.	T. LEATHERMAN			DP #27/0600	DP #27/1800
BITTERROOT I.R.	B. MILLER			" "	" "
HELENA I.R.	D. LARSON			" "	" "
MANTI REGS	C. JOHNSON			" "	" "
WASATCH REGS				" "	" "
HEBER REGS				" "	" "

7. CONTROL OPERATIONS

BRANCH DIRECTOR WILL MAKE ASSIGNMENTS

TOOLS 50/50 PULASKIS & SHOVELS; DRIP TORCHES, FUEL

8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATION SUMMARY

FUNCTION		FREQ.	SYSTEM	CHAN.	FUNCTION		FREQ.	SYSTEM	CHAN.
COMMAND	LOCAL				STATUS/ LOGISTICS	LOCAL			
	REPEAT					REPEAT			
DIV./GROUP TACTICAL					GROUND TO AIR				

PREPARED BY (RESOURCE UNIT LDR.):
APPROVED BY (PLANNING SECT. CH.):
DATE:
TIME:

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Long Tom Complex II
Boise Fire Weather Mobile Unit
Forecaster: Carl Gorski

Forecast 8
Issued at 2130 mdt
Wednesday Aug 28, 1985

.....Thursday Day Shift Forecast.....

Discussion: Another day of warm dry southwesterly flow aloft expected on thursday. Air mass showed minor cooling on wednesday, but humidities continued to drop into the upper teens and low 20s. A repeat is expected on thursday. A low pressure trough off the west coast which set up the current weather pattern is beginning to shift eastward. So changes in the status quo is just around the corner. The low should begin to move onshore Friday. As it makes landfall, tropical moisture from an old hurricane will be entrained and spread across the western U.S. The salmon river country should be on the northern edge of this moisture by Friday night. Till then only minor changes in the weather elements will be seen on Thursday.

.....

Sky/Weather.....Mostly sunny with few afternoon buildups. Morning inversions with tops near 6000 feet. Smoke trapped below inversions. Inversions lifting around 1100 mdt.

Temperatures.....Colder morning temperatures.
Maximums 70 to 73 at 8000 feet.
78 to 81 at 6000 feet.

Humidities.....Minimums 17 to 22 percent all elevations

Winds.....Eye Level, little stronger than wednesday. Late morning and early afternoon upslope winds 4 to 8 mph. Ridge winds southwest to west 6 to 12 mph with few gusts to 14 mph afternoon. Winds again drpping off after sunset except continued light ridge winds.

.....

Outlook Thursday night.....little change from wednesday night.

Outlook Friday.....Increasing variable high clouds friday afternoon. Chance of wet thunderstorms Friday evening and night.

FIRE BEHAVIOR FORECAST NO. 6

NAME OF FIRE: Long Tom Complex
EST: Salmon

PREDICTION FOR: 0600-1800 SHIFT
SHIFT DATE: 8/29/85

TIME AND DATE FORECAST ISSUED: 2200 8/28/85

SIGNED: Stephen B. Smith
FIRE BEHAVIOR OFFICER

WEATHER SUMMARY

See Fire Weather Forecast.

FIRE BEHAVIOR GENERAL: Intensity of fire will increase when the inversion lifts at about 1100 to 1200. Fire will continue to back down the slope into Owl Creek. An upslope run will be likely in the afternoon with spotting across Owl Creek.

SPECIFIC:

Burnout Prescription: Relative Humidity above 22%; Wind less than 7 M.P.H. Temp less than 70°.

Fire will become active at 1200 to 1300 and continue until sunset about 2000. It will be beyond the limit of hand control and spread at the rate of 6-9 chains per hr. Spotting will occur ahead of the main body of fire.

AIR OPERATIONS: Smoke should not affect flying operations until mid afternoon.

SAFETY: Fire related hazards are rolling material Falling Trees & snags and high rate of spread.

AIR OPERATIONS SUMMARY

1. INCIDENT NAME: LONG TOM Complex

2. OPERATIONAL PERIOD (Date & Time): 8/29/85 0600 - 2030

3. DISTRIBUTION
HELIBASES ✓
FIXED WING BASES

PERSONNEL AND COMMUNICATIONS

	NAME	AIR/AIR FREQUENCY	AIR/GROUND FREQUENCY
AIR OPERATIONS DIRECTOR	M. SALEEN	169.200 / 166.6125 HELITORCH	CH. 7
AIR ATTACK SUPERVISOR	N. DAVIS	122.950	CH. 7
AIR Support Sup	J. BISTRYSKI		CH. 7
HELIBASE MGR.	P.J. SMITH		CH2/122.950 166.6125 - HELITORCH

5. REMARKS (Spec. Instructions, Safety Notes, Hazards, Priorities) SAFETY 1ST!!!
- BRIEF ALL NEW PILOTS
- SET UP PORTABLE RETARDANT BASE
- NO FLIGHTS OVER CAMP
- COORDINATE ALL FLIGHTS DURING HEAVY FIRE USE THROUGH AIR ATTACK
- LINE CONTACT HELICOPTERS ON TAC-2 FOR SWITCH TO LINE FREQUENCY

LOCATION/ FUNCTION	7. ASSIGNMENT	8. FIXED WING NO.	8. FIXED WING TYPE	9. HELICOPTERS NO.	9. HELICOPTERS TYPE	10. TIME AVAILABLE	10. TIME COMMENCE	11. AIRCRAFT ASSIGNED	12. OPERATING BASE
RECON AIR ATTACK	FLY RECON, AIR ATTACK AND MISC. OVERHEAD			1	III	0630	0700	H-80 H-62	Sourdough BASE
MEAL SHUTTLE 2 BEAR TRAP	SHUTTLE MEALS TO BEAR TRAP CAMP 0630 and 1800 HRS.			1	II	0600	0630	H-98	SWAMP THEN LONG TOM
HELITORCH	BURN OUT OPERATIONS AS ASSIGN BY AIR ATTACK (REFER TO BURN PLAN)			1 1	III IV	0630	0700	H-366 H-60	SWAMP
LONG TOM COMPLEX	BUCKET DROPS USING PORTABLE RETARDANT LOCATION			ALL	ALL	AS NEEDED 0630	0700	ALL	
	13. TOTALS								

14. AIR OPERATIONS SUPPORT EQUIPMENT
HELITORCH, PORTABLE RETARDANT EQUIP, LONG LINE, HAND HELD RADIOS, DUST ABATEMENT (AS AVAILABLE)

15. PREPARED BY (Include Date & Time)
J. BISTRYSKI 8-28 2220

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NFES 1351

INCIDENT RADIO COMMUNICATIONS PLAN

1. INCIDENT NAME	2. DATE/TIME PREPARED	3. OPERATIONAL PERIOD DATE/TIME
Long Tom	~~0100~~ 27 Aug 2200	0600 - Day Shift 28 Aug

4. BASIC RADIO CHANNEL UTILIZATION

SYSTEM/CACHE	CHANNEL	FUNCTION	FREQUENCY	ASSIGNMENT	REMARKS
BLM - BIFC	1	TAC 1	166.725	East Side Line TACTICAL	Local Line of Sight
BLM - BIFC	3	TAC 3	168.250	West Side Line TACTICAL	Local Line of Sight
BLM - BIFC	7	Command Net	TX 169.750 RX 167.100	Command Channel Fire Overhead Both Sides	Repeater Channel To Base Camp
BLM - BIFC	2	TAC 2 Link To 122.950 Air Net	122.950	Ground / Air & Flight Following	UHF-AM Link
National Air Net / USFS		Air-Air & Air Attack / Retardant Contact	169.200 / 135.950	Initial Contact & Air Attack / Retardant Bombers	At discretion of Air Operations
BLM - BIFC	UHF Camp Ch. 2A	Bear Trap Camp To Sawtooth Camp & Support Overhead		Base Camp & Spike Camp Overhead	UHF ONLY, not Line Radios

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5. PREPARED BY (COMMUNICATIONS UNIT) Dennis Lamun

MEDICAL PLAN

1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED	4. OPERATIONAL PERIOD
Long Tom Complex			

5. INCIDENT MEDICAL AID STATIONS

MEDICAL AID STATIONS	LOCATION	PARAMEDICS YES	PARAMEDICS NO
Sour Dough Med. Unit	Long Tom Complex II	✓	

6. TRANSPORTATION

A. AMBULANCE SERVICES

NAME	ADDRESS	PHONE	PARAMEDICS YES	PARAMEDICS NO
Sour Dough Unit Truck	Base camp	—	✓	

B. INCIDENT AMBULANCES

NAME	LOCATION	PARAMEDICS YES	PARAMEDICS NO
Life Flight	Missoula, MT.	✓	
Life Flight	Pocatello Id.	✓	
EMS Helicopter	Boise, Id. (1-800-632-8000)	✓	

7. HOSPITALS

NAME	ADDRESS	TRAVEL TIME AIR	TRAVEL TIME GRND	PHONE	HELIPAD YES	HELIPAD NO	BURN CENTER YES	BURN CENTER NO
Steele Memorial	Salmon, Id.	30m.	2½hr.	208 756-4211	✓			
St. Patrick	Missoula, MT.	40min.	6hr.	406 721-4100	✓			
Consolidated	Idaho Falls, Id.	40min.	6hr.	208 529-6000	✓			
U. of Utah Ctr.	Salt Lake City Ut				✓		✓	

8. MEDICAL EMERGENCY PROCEDURES

An EMT most available to the scene of an injury accident will render aid & determine severity of the injury. Communications & Med Unit Leader will be notified. Injuries that require evacuation will be given priority. Serious or life threatening injuries will be directly to Salmon by air. Actions of other patients will be determined by

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9. PREPARED BY (MEDICAL UNIT LEADER) Jarrett E. Harrison

10. REVIEWED BY (SAFETY OFFICER)

NFES 1331

Safety Message!

Shift DAY Date 8-28-85

Lon - Bob - Jim; safety officers

STANDARD FIRE FIGHTING ORDERS

1. Keep informed on FIRE WEATHER conditions and forecasts.
2. Know what your FIRE is DOING at all times; observe personally, use scouts.
3. Base all action on current and expected BEHAVIOR of FIRE.
4. Have ESCAPE ROUTES for everyone and make them known.
5. Post a LOOKOUT when there is possible danger.
6. Be ALERT, keep CALM, THINK clearly, ACT decisively.
7. Maintain prompt COMMUNICATION with your men, your boss, and adjoining forces.
8. Give clear INSTRUCTIONS and be sure they are understood.
9. Maintain CONTROL of your men at all times.
10. Fight fire aggressively but provide for SAFETY first.

5100-16

DUE to A big DAY IN BURN-OUT I WOULD LIKE SHARE WITH YOU SOME FIRE FIGHTING "FOUR minute" BRIEFING FOR your CREW MEMBERS. THE Purpose is to BUILD SAFETY CONSCIOUSNESS Before YOU START ON TOMORROW's TASK.

- THE FOREMAN OR LEADER ARE THE MOST EXPERIENCED PEOPLE - stay with THEM & FOLLOW THEIR ADVICE
- CARRY your TOOLS SAFELY - WHEN WALKING THROUGH RECENT BURN OVER AREA. TRY 10 FT BETWEEN PEOPLE & 30 FT. BETWEEN SQUADS -
- WATCH your FOOTING -
- WATCH FOR SNAGS -
- KNOW your SAFETY ZONE

BRIEF your CREW ON THE "WATCH OUT" SITUATIONS -

FIRE SITUATIONS THAT SHOUT "WATCH OUT!"

1. You are building line downhill toward a fire.
2. You are fighting fire on a hillside where rolling material can ignite fuel below you.
3. You notice the wind begins to blow or increase or change direction.
4. You feel the weather getting hotter and drier.
5. You are on a line in heavy cover with unburned fuel between you and the fire.
6. You are away from burned area where terrain and/or cover makes the travel difficult and slow.
7. You are in a country you have not seen in the daylight.
8. You are in an area where you are unfamiliar with local factors influencing fire behavior.
9. You are attempting a frontal assault on a fire with tankers.
10. You are getting frequent spot fires over your line.
11. You cannot see the main fire and you are not in communication with anyone who can.
12. You have been given an assignment or instructions not clear to you.