



The Nacimiento Guard Station, Los Padres National Forest, September 8, 2020.

Dolan Fire Learning Review

Narrative

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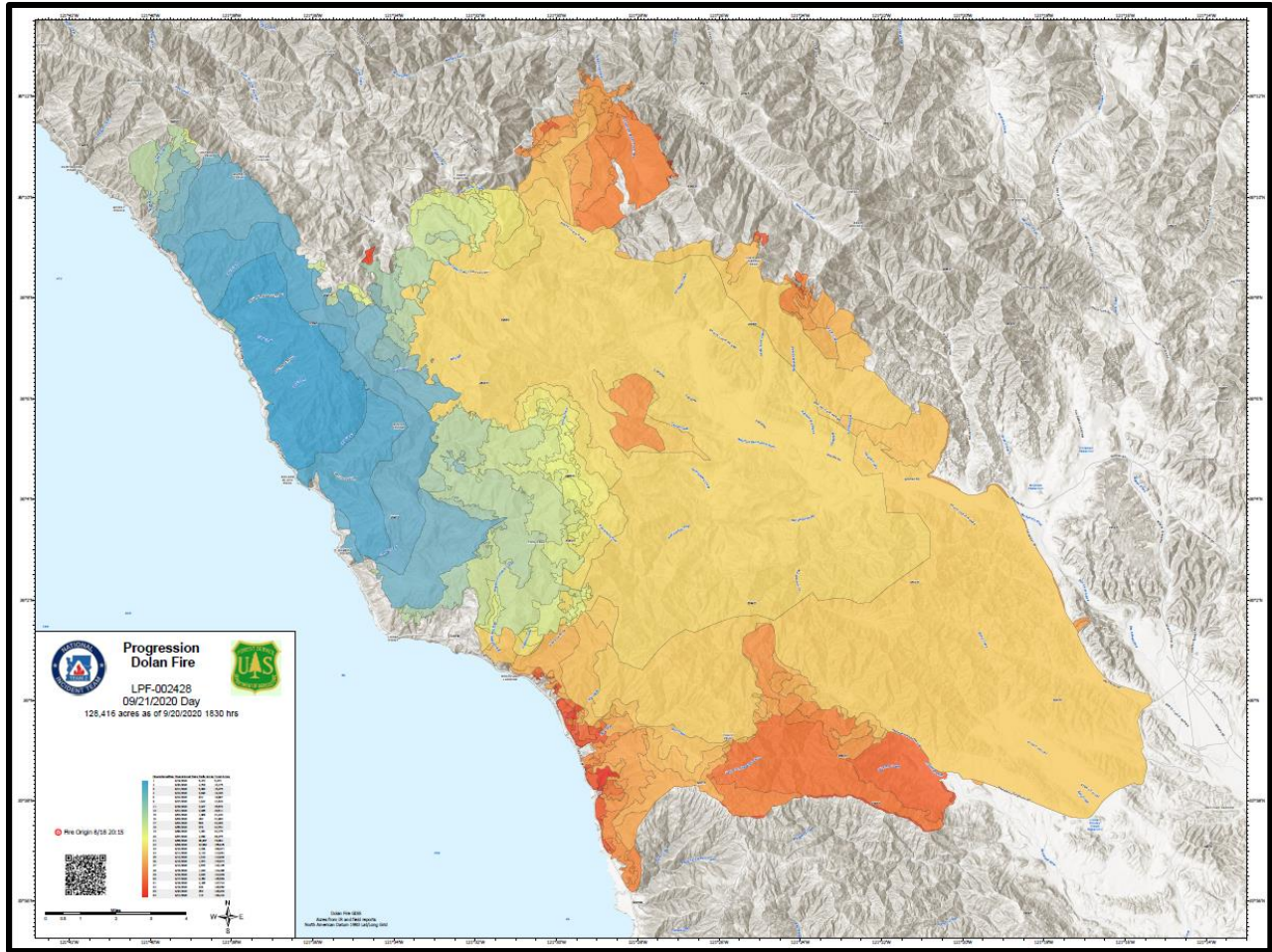


Figure 1. Progression map of the Dolan Fire from August 19, 2020 to September 21, 2020.

Dolan Fire Entrapment

Smoke is billowing out of the barracks and hot embers are raining down all around. Engine 16 is on fire. The engine bay is on fire. Marty can't get his pack out of the burning engine, which means he can't get to his fire shelter. He's just standing there, and Rene can't get his attention. She has her shelter out, ready to go. She hits him, but he just stands there. She hits him again, but he still just stands there. Marty is not ready to commit to the shelter; he's thinking about potential dangers from the propane tanks around them, and that more needs to or could be done. Rene hits him again and pulls down on his shirt to get him down to the ground and into the fire shelter. Rene tucks the fire shelter around him and cinches it in tight under his arms and legs. She takes a quick look around and then climbs in under the shelter with him. Eleven other firefighters are deployed around them in the parking lot of the Nacimiento guard station. The heat inside the shelters was stifling. "I could feel the skin tightening on my face. Mucous was coming out of my nose and eyes, hanging off my chin. I felt like all the fluid was being roasted out of me. My throat was so sore I could barely drink my water." Everyone is asking the same question: "How did we get here?"

Background

The Los Padres National Forest

The Los Padres National Forest (LPF) extends along the Pacific Coast from the city of Ventura on the south to Monterey Bay on the north, touches the Pacific Ocean on the west, and extends east to the foothills of the southern San Joaquin Valley. The LPF includes the San Rafael mountain range extending northwest and southwest from the San Luis Obispo county line through Santa Barbara County, swinging to the east to merge into the Tehachapi mountains and broken continuation of the San Gabriel Range. The LPF terrain is rugged, with steep slopes and dissected ridges and valleys. This terrain forms a substantial barrier between the Pacific Ocean to the west and the valley to the east, generating steep gradients in wind, temperature, and humidity across the LPF.

This story involves the Pleasant Valley (PV) guard station (Engine 17) and the Nacimiento guard station (Engine 16). The Nacimiento-Fergusson Road is a thoroughfare running west-east through the LPF. It connects Highway 1 to the Nacimiento guard station and continues east to Fort Hunter-Liggett (Figure 2).

National Preparedness

Wildland fire activity had recently dramatically increased, with close to 405 new fires being reported Nationally on August 18, including 23 new large fires. Northern California reported 250 new fires, many that were still unstaffed. High fire activity was also occurring in Southern California, the Rocky Mountains, Northern Rockies, Great Basin, Northwest, and Southwest areas. Initial and extended attack continued to persist in west Texas and Florida. There were 15,039 firefighters and support personnel working on 53 uncontained large fires, including 4,400 Forest Service personnel. The nation moved to a Preparedness Level 5 (PL5) on August 19. At PL5, significant wildland fire activity is occurring in multiple Geographic Areas. Increased competition for resources is occurring between local Geographic Areas, with heavy mobilization of resources occurring through the National Interagency Coordination Center (NICC) at NIFC. The priorities at that time were Northern California (North Ops), Rocky Mountain, and then Southern California (South Ops). There was a recent large lightning event that caused numerous large incidents in North Ops; this caused a strain on Region 5 suppression resources. The Dolan Fire was number eight on the priority list for South Ops.

The Dolan Fire

The Dolan Fire was reported on August 18, 2020 ten miles south of Big Sur, California on the LPF. The cause of the fire is still under investigation. The fire was initially managed under unified command by a Type 1 Interagency Incident Management Team (IMT) and Big Sur Fire, and later transitioned on September 3 to a Type 1 team from another geographic area that was in place when this entrapment occurred. The nation was in PL5 with multiple geographic areas experiencing a high level of fire activity. The fire was threatening multiple structures, including the communities of Partington Ridge, Big Sur, and Lucia as well as multiple businesses, communication sites, and parks and recreation sites.

An Incident Command Post (ICP) was set up at Pfeiffer Big Sur State Park. Several spike camps, forward operating bases, and sleeping areas were dispersed around the fire. There was typically several hundred to a few thousand acres of growth each day prior to this event. Beginning the evening of September 7, fire growth significantly outpaced what firefighters had experienced on this fire, with runs of over 37,000 and 34,000 acres in the days around this incident (see Figure 1, Progression map). In the twelve days prior to the incident, a high-pressure system sat over the fire area increasing temperatures, lowering relative humidity, and increasing burning indices. As the high-pressure system broke down, a frontal system approached from the northeast, and conditions were aligned for significant fire growth.

Pre-Entrapment

The IMT personnel had substantial knowledge of the LPF. This IMT had been assigned to previous fires on the LPF and local LPF personnel were assigned to the IMT, including a District FMO as an Operations Section Chief trainee. The IMT was concerned with management of the Engine 16 and Engine 17 crews following the transition from the previous team. In an effort to eliminate any ambiguity over the crews' assignments and associated responsibilities, the crews were demobilized and formally ordered and reassigned by the IMT. The crews were assigned as day resources to Division X. Following reassignment, the crews primarily continued work around their stations, with the Engine 17 crew also helping with structure protection at Station 16. The crews continued to sleep at their respective stations following their day shifts. The IMT was well aware of the two stations, with the area around Station 17 serving as a spike camp and Station 16 serving as a de facto meeting place for IMT personnel due to its proximity on the Nacimiento-Fergusson Road connecting the east and west sides of the fire and the hospitable atmosphere of the Nacimiento station and crew. The Nacimiento station was mentioned in initial Wildfire Decision Support System (WFSS) decisions, but it was not included in the IMT's structure protection plan.

The days leading up to the entrapment were successively hotter and drier, with increasing fire spread. The nation was in PL5 and the Dolan Fire was not as high of a priority as other fires that were threatening and burning more structures in other parts of California and Oregon. The IMT was perpetually short-staffed and trying to make progress with the limited resources available. The team had been primarily focused on the eastern edge of the fire where most of the recent growth had been and where there were communities and structures at risk. The Nacimiento guard station was still about three miles south of the fire at the end of the September 7 day shift and wasn't really on anyone's immediate radar. The team had anticipated and planned for large fire growth on the night of September 7 due to the dry conditions and approach of a frontal system. The fire grew over 30,000 acres that night, mostly to the southeast, and kept the team focused on the eastern portion of the fire where a newly established ICP had to be relocated as the fire approached in the middle of the night. This emergency relocation of ICP required a large effort and consumed the attention of the team for much of the night (finding a new location to establish ICP, ensuring everyone was evacuated, etc.). Meanwhile, the fire was moving updrainage toward the Nacimiento guard station.

Engines 16 and 17 were assigned to the fire but had been afforded the autonomy to work out of their respective stations without formal assignments elsewhere on the fire. The area that included the Nacimiento station was part of a mandatory evacuation area for private homeowners, but the crew was still living at the station. This contributed to the crews' notion that the station was a safe place to be. The successful defense of the station during previous fires, the strong personal attachment that the Engine Captain and others had to the station, and ambiguity around the specifics of the plan ('stay and defend' or 'lost cause – evacuate') likely contributed to some level of comfort with staying to defend.

This incident took place during the COVID-19 pandemic. Although COVID-19 did not play a direct role in the events leading up to the Dolan Fire entrapment, social distancing protocols, including dispersed dining, sleeping, and operational briefings, were in effect and may have exacerbated communication issues leading up to the entrapment.

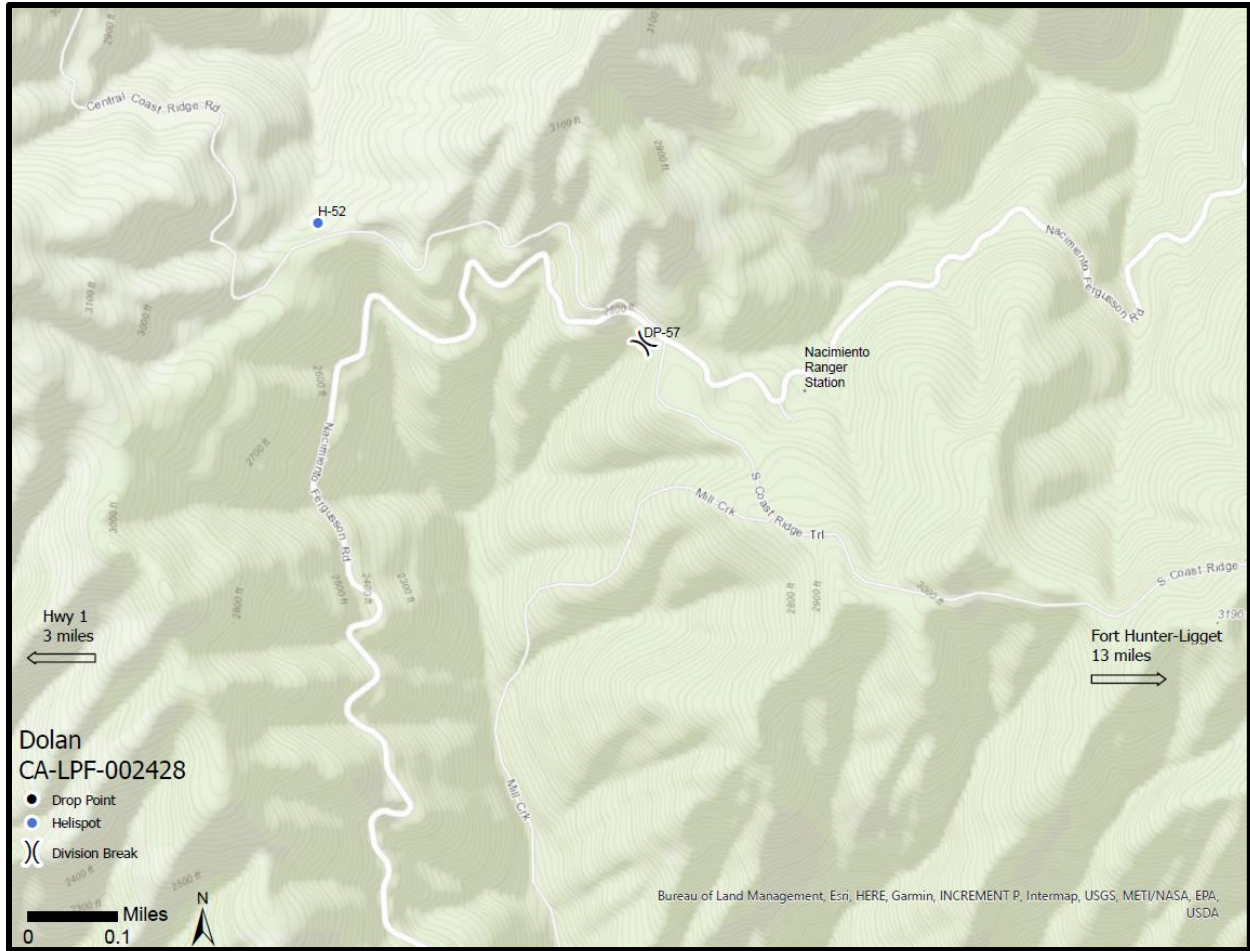


Figure 2. Map of the area around Nacimiento Ranger Station.

The Story

This story is set up from the perspectives of three key parties involved in the series of events that unfolded at the Nacimiento guard station on September 8, 2020. The framework is laid out from each of their points of view from the night before up until around 0745 on the morning of the entrapment. From there the story moves forward as a single narrative. The Nacimiento guard station (Station 16) is located on the Nacimiento-Fergusson Road, 7.1 miles from Highway 1. The Pacific Valley station (Station 17) is on Highway 1, located 4.2 miles south of the Nacimiento-Fergusson Road junction (Figure 3). All names in this document have been changed for privacy concerns.

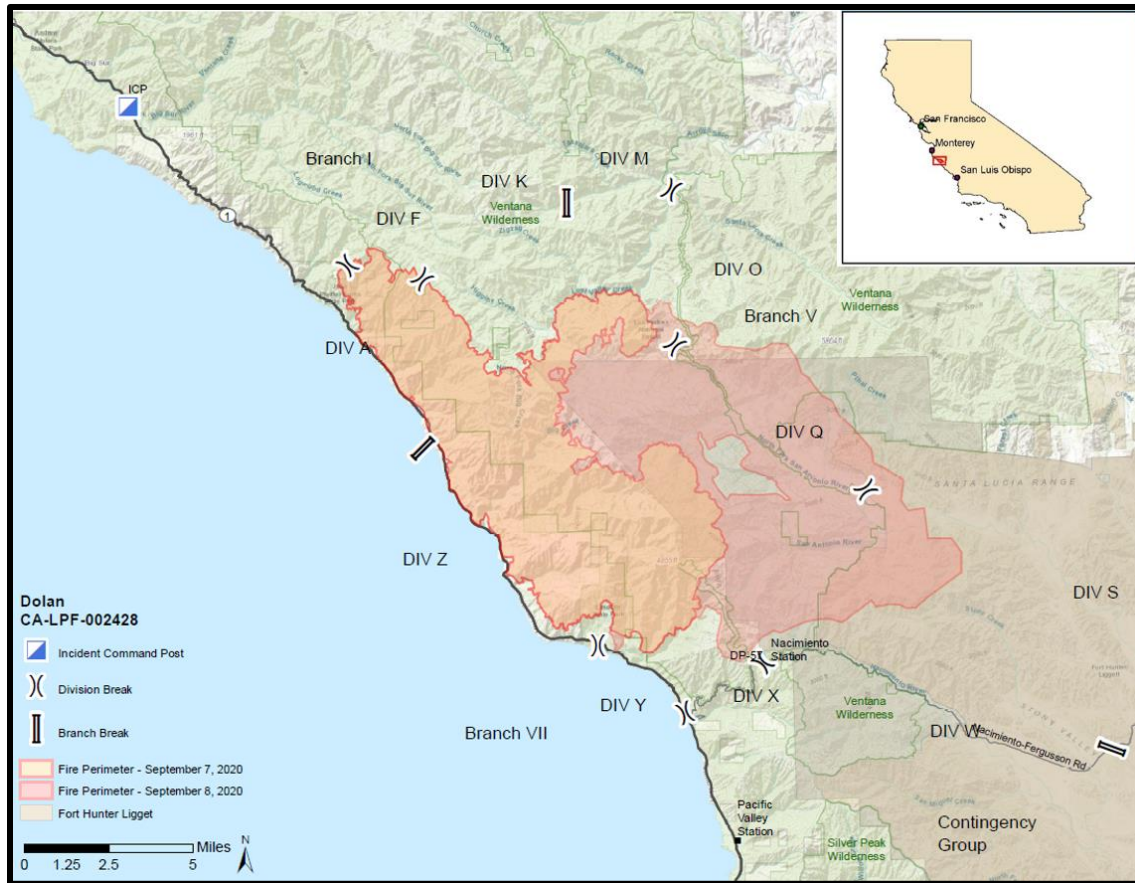


Figure 3. Geographic area surrounding the Nacimiento guard station and Dolan Fire perimeters on September 7 (orange) and 8 (orange and red).

Perspective from the Nacimiento Guard Station Engine 16 Crew

Gene (Engine 16 Captain) has been at the Nacimiento guard station for nearly ten years. He takes a lot of pride in the station and the crew’s work at the station. Gene describes the station as “a part of him.” He says, “Every day I ask myself, ‘How can I make my station defensible?’” The Engine 16 crew is green (1 to 5 seasons of firefighting experience) and they are excited to be working and living at the Nacimiento guard station for the season. They have already put a lot of time into prepping the station – they have handline in place and plumbed with inch-and-a-half trunk and one-inch laterals, along with sprinklers around the barracks. They have been working day shifts for Division X but have been allowed time to set up defenses for the station, and have had help from a hotshot crew and from Engine 17 from the Pacific Valley guard station. The Nacimiento station has been successfully defended from fires in the past, and the defenses set up this time were even better than for previous fires. They feel they have a good handline. They’ve also run weedwhackers, thinned trees, and piled debris.

The fire is active that night and some of the Engine 16 folks stay up to keep an eye on its progress. It doesn’t seem like it will be a threat that evening, but Marty (Engine 16 Fire Engine Operator) is concerned enough that he tells folks he’ll stay up and keep an eye on it. Marty has a place to sleep in the office since he doesn’t have a room in the barracks. At about 2300, Dustin and Scott (both firefighters on Engine 16) go about a mile down the road to the east to get eyes on the fire.

‘Knock, knock, knock!!!’ Chris is banging loudly on the barracks window, telling people “prepare to evacuate!” It’s around 0230. Some crew members gather valuables and put them into their personal

vehicles in the parking lot. Some crew members feel a little bit of panic and gather paperwork and sentimental belongings and take them to their cars. Dustin and Rene (both Engine 16 firefighters) go over to the office and talk with Marty. Marty relays to them that the Night Division Supervisor told him that he thought “Safety had jumped the gun” and evacuation was not needed; they think they’ll be okay for the night and can reevaluate in the morning. Rene had just returned to the crew three days earlier, after completing an Assistant Fire Engine Operator (AFEO) detail on another forest. Dustin is new to the station, having started in May as a new permanent GS-4 on the engine. Dustin and Rene wake up Scott and Stan (also firefighters on Engine 16), brief them on what they know, and for the remainder of the night folks are getting up frequently to check on things and don’t really get any solid sleep.

Marty calls down to Gene’s house located next to the Pacific Valley station to update him on the situation. The last information Gene received was that the fire was about 3 miles from the station at 2100 the night before. Now he is hearing they can “see a glow” from the station. Gene heads up the Nacimiento road and ties in with Pully (Night Division Supervisor) to get an update. Pully and Gene have a brief discussion. Gene proceeds down the road and past the station to get eyes on the fire north of the station. He returns back to the Station and tries to get some sleep on the couch.

Pully arrives and ties in with Gene a little before 0700 and tells him the fire is coming. Gene quickly wakes the crew. “Time to get up; the fire’s here!” Gene is banging on bedroom doors and waking people up. Dustin hears Gene yelling, “Get ready – the fire’s coming this way. We’re probably going to evacuate, prepare to evacuate!” Others hear Gene saying, “Time to wake up, the fire’s coming. We’re going to do structure protection.” While his crew members gather their gear, Gene heads west to where the Stanislaus Interagency Hotshot Crew (IHC) is working a slop over down the Nacimiento road then returns.

At 0722, Stan and Rene head east down the Nacimiento road about a half mile to the station’s water tank and pumphouse to top off the pump with fuel and turn it on. Stan and Rene can see the fire down the drainage to the northeast. They also see that the fire has crossed the road to the east above the pump house and they both feel nervous. They return to see that Engine 17 has arrived. Stan and Rene report that the pump has been started and relay their observed fire conditions.

The crews gather together near the flagpole in the parking lot of the Nacimiento station for a quick briefing and assignments.

Perspective from Night Division Management

Pully is an experienced Division Supervisor and the night of September 7 is his second shift on the fire. He is assigned as the only Night Division due to a lack of available resources under the national PL5. Pully feels there is a disjoint between day and night operations and gaps in communication because people are so spread out with some staying at ICP and others at the Pacific Valley spike camp. Pully in-briefs with the Division Supervisor assigned to Division Y at the Hermitage spike camp; this is where he thinks his night is going to be. There had been a burnout earlier in the day. Pully and Stephen (Night Division Trainee) are assigned to monitor the fire and track its activity through the night and maintain what the Day Division has done. Pully has an engine strike team and a task force assigned to him and he has them working on the west side of Division Y along Highway 1.

Pully hasn’t been up the nearby Nacimiento-Fergusson Road before, so he decides to drive up there to scout the fire and get a feel for the area where there was a burnout operation planned for the following day. It’s a main thoroughfare across the fire west to east (Highway 1 to Fort Hunter Liggett). Pully only has the morning’s maps and doesn’t know the exact location of the fire. He arrives at Drop Point (DP-57)/Helispot-52 (H-52) around midnight and can see fire toward Cone Peak to the north. He decides this is a good location to observe fire activity.

Paully hears a conversation over the radio about sending a Safety Officer over from the east to check on the guard station near DP-57. This is the first he's heard about a guard station on the division. He radios back that he's close and will go check it out. Paully drives down the road about a quarter of a mile and pulls into the guard station. He sees an engine bay, a couple of storage sheds, and a barracks. He sees personal vehicles parked along the west side of the parking lot near the barracks but doesn't see the engine. He notices some structure protection work has been initiated. Line has been dug around the buildings, two drop tanks are set up (one full, one empty), sprinklers are out, and there are hose lays with coiled laterals encompassing the structures. There are two portable pumps packaged in their boxes. Paully scouts the hose lay and inspects the hand line. He doesn't like it. He thinks to himself "This place is indefensible. There's no way I would stay to man that hose lay." He heads back up to DP-57 and talks with his wife on the phone for a minute. He tells her about the station and says, "There's no way I'd be at that station when the fire goes through."

Stephen (Division Trainee) arrives at DP-57/H-52 to tie in with Paully around 0230 to discuss fire progression and behavior. Fire activity is increasing, and Stephen is more concerned than Paully about how close the fire is. Paully anticipates the fire will approach DP-57 from the east at approximately mid-shift the following day. Stephen thinks the fire he can see to the north will impact them first, within hours. Stephen radios operations saying he thinks the guard station will be impacted in one to two hours.

Chris, the Safety Officer (SOFR), who used to be detailed at Nacimiento and is familiar with the people, arrives at DP-57 around the same time as Stephen on her way from Fort Hunter Liggett. She asks Paully and Stephen about the guard station. Given the fire behavior she observed driving up, she comments to Paully and Stephen "Nac's gone" meaning she thought the fire was likely going to destroy the station. She asks if there are people sleeping there. Paully says he's not sure but doesn't think so. Chris suspects there are people there, so she heads back down to check. Chris had worked at the guard station in 2015 and was familiar with the grounds and the longer-term employees. Chris bangs on the bunkhouse window until Rene and Michael answer. Chris updates them on the situation and Rene asks if they should leave. Chris responds, "You should be ready to leave at any moment. Maybe you should go look at the fire to assess, but I need to talk with your AFEO and you can make a plan." Chris goes over to the office and talks to Marty (AFEO). She tells him, "It's not a good idea to hang out here; the fire's moving too fast and you don't want to get cut off." She also tells him they should prepare to evacuate and that they should go check out the fire activity for themselves. Marty responds, "We're going to defend the structure." Chris says, "Do what you need to do but you should get ready to leave. The fire's below you guys in the draw." From experience she knew that you should "Never let your guard down on the LP [Los Padres], day or night." Chris assumes the IMT knows about the guard station since there are local resources assigned to the fire, including a District Fire Management Officer/Division Chief, as an Operations trainee.

Chris drives up to DP-57 to tie back in with Paully and Stephen. She confirms there are people at the guard station and that she told them her recommendation was to prepare to evacuate. Paully and Stephen move on to H-52. Chris heads down to Highway 1 and encounters Gene traveling up. She tells him, "The fire is moving fast and your station will probably be burned up." Gene hears her say, "The fire is moving fast and that the road is not going to be able to hold it." She notices a stressed and worried look on his face, and she hears him say "My station is in danger." Chris continues down to Highway 1. Gene arrives at H-52 sometime before 0330 and talks briefly with Paully and Stephen. They have a short discussion on the anticipated timing of the fire arrival and then Gene heads down to his station to tie in with his crew. After Gene leaves, Stephen thinks to himself that this is weird, and that he would have everyone up on "red alert" if it was his station and the fire was so close. Paully and Stephen agree that one of them will go wake folks up if the situation changes.

By 0445 fire activity is increasing. The fire is spotting ahead of itself approximately three-quarters of a mile away. Pully and Stephen are concerned about the engine strike team that is scheduled to drive through the Nacimiento road later that morning. At 0525 Stephen texts Operations about getting the two dozers and Cell on Wheels (COW) trailer moved from DP-57 to a safe location. Operational tempo escalates over the next two hours. Around 0600, Day Division X Trainee overhears chatter and is surprised to learn how far the fire has progressed – the fire is beyond H-52 and is going to bump the Nacimiento road. Pully and Stephen notice a lot of warm ash coming down all around them. Around 0630 Pully and Stephen decide to leave DP-57. Pully is going to wake up the folks at the guard station and Stephen is going to break down the COW and trailer it back down to Highway 1. Pully leaves for the guard station and Stephen tells him, “Don’t be too long.”

Stephen struggles with the COW and is unable to break it down. He leaves it and heads down to Highway 1. Stephen makes frequent stops to look down the drainage just west of DP-57 to ensure nothing has spotted over the Nacimiento road, potentially cutting off their escape route. Two dozer operators start their drive up the Nacimiento road around 0630 to retrieve their dozers from H-52. Around the same time, Pully radios for no one else to come up from Highway 1. The two dozer operators make it up to DP-57, but the driver of their transport vehicle is stopped at the Nacimiento road entrance and not allowed to proceed uphill to meet with his operators. Someone on the Stanislaus IHC stops Stephen on his way down to ask if there’s time to go up to DP-57 and grab their UTV. Stephen tells him he has time but to make it quick. Stephen continues towards Highway 1, passing the two dozer operators around 0645 and eventually makes it down and ties in with his resources. The dozer operators make it to H-52 at 0700, retrieve their dozers and operate their equipment through active fire on Cone Peak Road to reach DP-57.

Pully pulls back into the guard station to tell them it’s time to leave. Pully recalls Gene saying, “We’re not going to lose my station.” Gene drives down the road to the west and ties in with the Stanislaus IHC Superintendent – they were assessing a slopover below the Nacimiento road. Gene drives back up the road and then down past the station to the east to check out the fire, before driving back into the Nacimiento Station for the last time. Pully heads back to DP-57 and encounters the two dozer operators. Pully has the two operators get in his vehicle and takes them to meet with Gene at the Nacimiento station. Gene tells them, “Bring your dozers here and we can protect them.” Pully takes the dozer operators back to DP-57 to get their dozers. Pully returns to the guard station and sees multiple spot fires. Pully sees fire approaching from the canyon below them and knows the situation is bad. He realizes that Gene has no intention of leaving. He debates whether to leave or stay and help. He told himself earlier in the night there’s no way he’d stay, but he also doesn’t feel like he can just leave them there. It’s around 0745 and Engine 17 arrives to help.

Perspective from the Pacific Valley Guard Station Engine 17 Crew

The night of September 7 is a regular night and the crew goes to bed around 2200. The next morning the crew wakes up at their normal time, around 0600. At 0630 Division X Trainee asks Sam (Engine 17 Captain) and Al (Engine 17 Fire Engine Operator) to head up the Nacimiento road and “engage the fire, protect values where you can, and help Gene.” Sam and Al tell the crew they are headed up to the Nacimiento station and they will have their briefing there. Several of the crew are initially excited as the prior days had been boring with no real assignments on the fire up to this point. Kris, a senior crew member, is concerned about how rushed everyone is and that “we don’t know what we’re getting into.”

Excitement wanes as the crew makes their way up the Nacimiento road. They see that fire has crossed the Nacimiento road about halfway up. Al stops and has a brief discussion with the driver of a Stanislaus IHC rig and learns that the fire has also crossed the Nacimiento road east of DP-57. Over the radio they hear that fire has crossed Nacimiento road near Ponderosa Campground. Kris is driving the chase vehicle

and repeatedly attempts to contact Engine 17 for more information about what they are getting into but receives no response. Kris thinks to himself, “Come on guys, let’s not drive to our deaths.” Other crew members note more extreme fire behavior and high winds. Kris is concerned about rushing to engage the fire without proper information.

Meanwhile, the two dozer operators are transitioning from DP-57 to the station. They operate through the flames in order to reach the station. The entrance is unobstructed as they approach the station around 0720. A few minutes later Engine 17 arrives. Engine 16 stages next to the station entrance to be in position to pump the hose lay around the compound.

As Engine 17 and their chase truck pass through DP-57 and into the station around 0720, Kris looks down the drainage past the station, sees flames, and thinks, “Oh, hell no!” Engine 17 backs into a parking slot near the flagpole. Kris parks the chase truck in among the personal vehicles (POVs) and goes over to the supervisors and says, “We have about four minutes to get out of here, the window’s closing fast.” Gene looks at him and says, “Oh, really...? You think...?” Al looks around, sizing up the area. He feels they can defend the station. He notices the hose lay with laterals, the handline, and the saw prep around the station. The crew heads to the flagpole for the initial briefing.

Convening at the Nacimiento Guard Station: The Flagpole

The two engine crews gather in the center of the compound (Figure 4) near the flagpole and they have a quick briefing, mostly led by Gene. “We’re going into structure defense mode. We may have to burn out,” Gene says. They could see a pretty big glow down drainage, and thirty seconds later they could see flames about a quarter mile away.



Figure 4. Post-fire overhead view of the Nacimiento compound.

The crews disperse to staff the hose lay around the compound. Dustin operates a nozzle above the barracks. Rene, Daniel, and Austen (all Engine 17 firefighters) staff nozzles below the engine bay. Stan is on a nozzle on the edge of the draw along the parking lot. Andie (Engine 17 firefighter) is on a lateral off of Engine 17. Kris attempts a burnout with a fusee between the road and barracks but isn't successful; the fire is already there and moving back around behind the barracks. Al (Engine 17 Fire Engine Operator) is lighting with a drip torch in the draw to the east of the engine bay. The ember shower becomes more intense. Austen looks around and sees that everyone is still on their laterals, so he stays on his. Not wanting to get cut off, Al yells at Stan and Austen, "Let's get up to the asphalt!" Sam (Captain 17) is also yelling down into the draw, "Get out of there! There's too much heat!" It is dark even though it is after 0745 in the morning. Pulses of heat are washing through the compound and it is getting very smoky. A run of fire comes by them up the drainage and around the back of the barracks, embers are raining down all around them and starting countless spot fires.

Kris looked up and saw a second run coming downslope towards the station from the southeast. As Rene gets back up to the parking lot, she can see that the barracks are fully engulfed in fire. But the POVs are still okay. Others are dodging in and out between vehicles, using them as heat shields, and folks are abandoning their laterals. Al yells, "Get inside! Get inside the engine bay!" At 0754, Al, Gene, Sam, and Pully remain outside. Al and Gene are spraying water on the deck, sheds, and other items around the engine bay. Pully is calling Operations and Communications telling them they are cut off at the Nacimiento station and confirming that nobody else is coming into the area. The dozer operators are still in their machines, repositioning as the pulses of fire come in.



Figure 5. Inside the engine bay office (photo taken at 0756 September 8, 2020).

In the engine bay, everyone went around to ensure all the windows are closed. Rene grabs drinking water telling everyone inside to have some. Through the northwest window they can see the HAZMAT shed full of fuel and oils become fully involved with fire. Things begin to catch fire on that side of the engine bay. Smoke is now filling the engine bay and everyone inside begins to shift over to the office in the south side of the structure (Figure 5).

Al continues to spray the outbuildings adjacent to the engine bay. He shouts to Marty for more hose so he could get closer, but the water stops flowing. Either Engine 17 ran out of water or something went

wrong. Either way, it doesn't matter, the outbuildings are nearly engulfed and the deck leading to the office door that Gene had been spraying with water has reignited. The radiant heat from the three outbuildings burning next to the engine bay, combined with the heat from the increasing flames, and the heavy ember wash catches the wooden foundation of the engine bay on fire.

As the engine bay catches fire around 0805, the firefighters are told to go back outside. With no time to waste, the firefighters inside the office begin to exit the building through the front door of the office. Everyone running out of the office has to jump over the railing as everything is beginning to catch fire. Rene sees that Marty is trying to break a window out of the utility truck with a rock. He had put one of the station's cats into the rig to save it from getting burned earlier, but now the truck has caught fire and he is having no luck breaking the window. With everyone now outside of the engine bay they group up near the island just south of the flagpole in the middle of the parking area.

Shelter Deployment

Once everyone is outside, they group up near the island (Figure 6) where Paully's truck, Engine 17, and the dozer provide some respite from the gusting wind that is pushing the heat from the burning engine bay and the merging spot fires down onto them. The smoke is thick, burning everyone's eyes, causing them to cough, and it is getting very hot. Gene asks Al if they should leave. They are surrounded by fire, engulfed in heavy smoke and embers. The Nacimiento road, their only way out, is blocked by the flames. The barracks are fully engulfed in flames, Engine 16 is on fire and partially blocking their way out of the guard station, the engine bay is on fire, and the flaming front is on top of them. Stories of successful and unsuccessful vehicle escapes from fires are running through Al's head. He decides that they could very well drive into a worse situation than where they are. Al responds to Gene with, "Where?" That is when Al realizes he is reaching for his fire shelter. Al shouts, "Get your fire shelters out!"

As Paully hears the words "get your shelters out" he notes that things are calm. The crews get out their shelters and shuffle around a bit. They group up and receive a briefing from Paully. This briefing covers the basics learned in training – stay tight in groups, communicate, have water and a radio. Paully lines out where the deployment site will be. There is a slowdown of operational tempo.

Paully radios the planning operations, letting them know that they are going into their shelters. Paully notes that as the words come out of his mouth, he has difficulty saying the words as he sort of stumbles on the word "sh-shelter." The Engine 16 and Engine 17 crews begin deploying their shelters. Marty shouts that he doesn't have a fire shelter. Al tells him to find the smallest person and share with them. Marty had been working near the engine, with his pack inside. When the rear wheels caught fire, he attempted to retrieve his pack, but the heat and smoke were too much. Rene sees that Marty is just standing there with a blank look on his face, "like a zombie." She tries to get him into the shelter, but he just stands there. She hit him a couple times to try and snap him back into the moment, but it doesn't work. Marty is not ready to commit to the shelter. He's thinking about potential dangers from the propane tanks around them, and that more needs to be, or could be, done. Rene is forced to tug Marty's shirt to physically take him down to the ground. Rene deploys her shelter over him, and crawls into the shelter with him. Marty attempts to get up and out of the shelter, forcing her to take him down to the ground before covering them both with the shelter. Later, Marty recalled, "She saved my life. I'm very proud of Rene and what she did."

The deployment is otherwise mostly orderly. Everyone has their gloves, some have water bottles, many have their radios. The shelters are shaken open and the firefighters climb in them, deploying on the dirt island next to Engine 17 and the asphalt driveway adjacent to the island with their feet towards the engine bay.

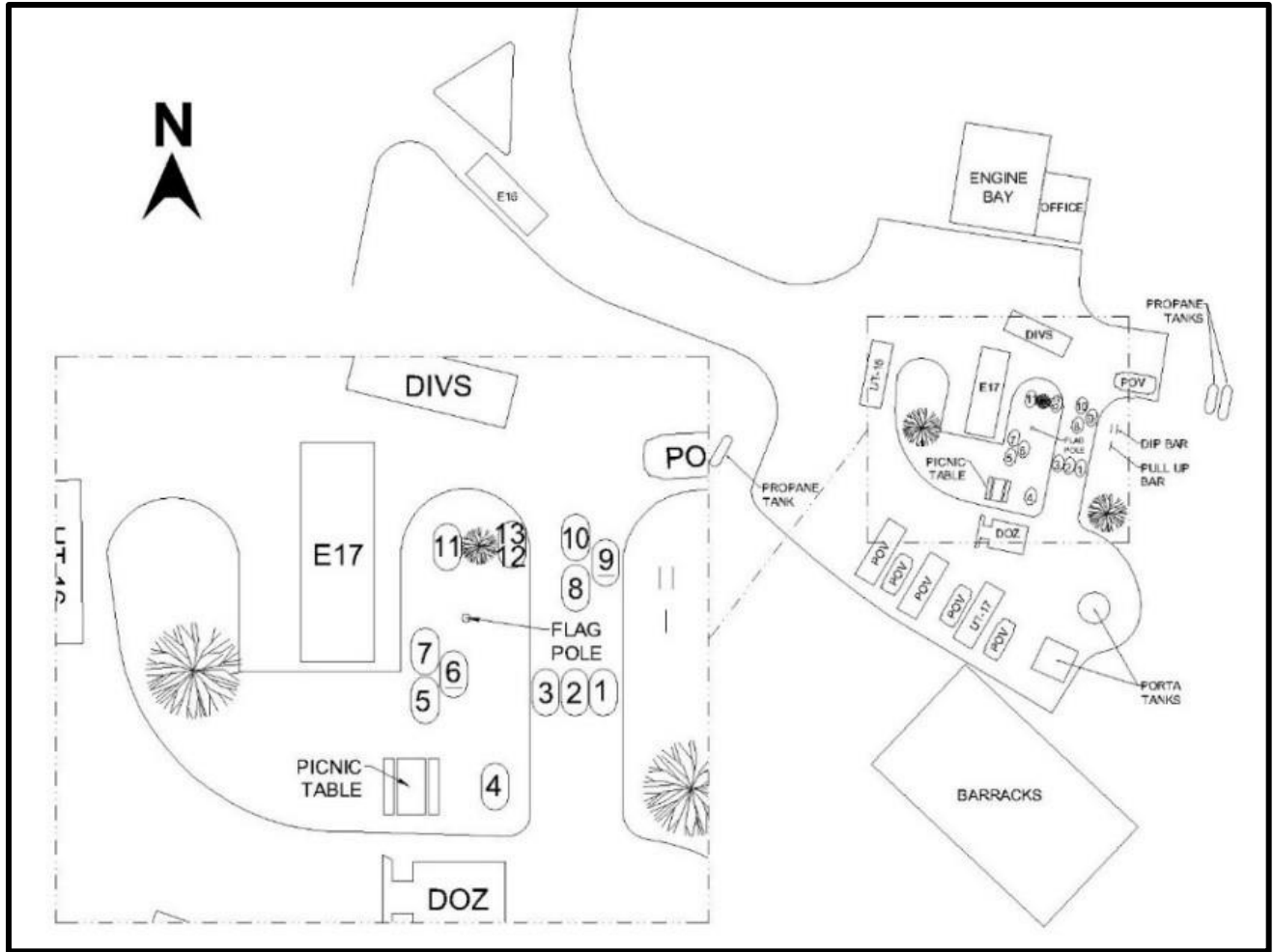


Figure 6. Shelter deployment locations and surrounding vehicles and buildings on the compound.

The firefighters are calling back and forth to each other from inside their shelters, shouting encouragements and that they were still there and doing okay. Explosions from compressed air tanks, propane tanks, gas cans, and incendiary devices; rupturing vehicle tires; the roaring fire; and gusting winds make communication difficult. Branches begin falling from the trees overhead as the fire churned all around them. Several times, during lulls in between pulses of heat, Al looks out of his shelter only to have smoke, embers, and heated air blow into it. Pully remembers the need to reposition as pulses of heat came through at different vectors from different flaming objects; one of these occurred at approximately 0804. Gene looks out of his shelter and sees that a dozer is on fire. The dozer operator has just exited the burning dozer and made his way on foot to join the other operator in his dozer as he was beginning to transition out of the compound to head down the Nacimientto road to the east.

The heat from the fire and burning buildings continues to intensify, catching Engine 17 and Pully's truck on fire (Figure 7). Firefighters are deployed near Pully's truck and Engine 17, using them as heat shields from the fully engulfed engine bay. Several feel the heat from the burning vehicles and begin to "crawl like inchworms" away from the burning vehicles towards the dozer. Multiple firefighters' comment on how hot the ground was as they crawl to new positions, especially on the asphalt. Some firefighters remain in their original locations, however, experiencing the ever-increasing heat from the now burning vehicles.

Multiple times during the event Pully and others peak out from under their shelters to assess the outside situation. At one point, Pully can hear the roar of a second run burning around them. With the amount of structures, cars, and equipment burning, this is not a typical deployment. Unlike typical wildland fuels, these structures and vehicles have much longer burning times and burn at higher temperatures.

As his truck is burning, the heat was becoming unbearable for Pully. When he deployed his shelter, he noticed that some of the aluminum foil was already coming off his shelter. The intense heat and wind further exacerbated the delamination. The aluminum foil is the primary protection from the radiant heat and Pully feels the temperature rising. Once his truck goes from a heat blocker to a heat source, conditions in his shelter deteriorate. Pully feels that due to the intensity and duration of the heat and the amount of smoke he may pass out and potentially could die. Pully gets out of his shelter at around 0840 and heads for the drainage to the east of the station, taking his dilapidated shelter with him. He doesn't know if this move will eventually take him to his death or if he will find reprieve from the heat and smoke. Fire activity has decreased enough in the drainage to allow Pully to breathe as he proceeds approximately 100 yards down to the Nacimiento road.



Figure 7. Post-fire view of the deployment site looking toward the engine bay.

The crews from engines 16 and 17, still in their shelters, are now feeling the temperature rising. Kris, who deployed near Pully's vehicle on the asphalt, says that "I could feel the skin tightening on my face. Mucous was coming out of my nose and eyes, hanging off my chin. I felt like all the fluid was being roasted out of me."

Stan, who is deployed near Engine 17 on the dirt of the island, receives first and second degree burn injuries on her backside as the strong winds hit her. The heat continues to blast them in pulses, then the dozer catches fire. The firefighters who had crawled away from Pully's vehicle and Engine 17 are now feeling the heat coming off the dozer as it burns. Dustin, who earlier had the wherewithal to remove a gas can and a 20-pound propane tank from the deployment site, lay in the very uncomfortable conditions inside his shelter, thinking about his life decisions and his family when he hears that the dozer he had crawled closer to earlier is on fire. Dustin feels the heat from the dozer starting to increase when someone

calls out that they are all going to move into the black to the east, off the edge of the driveway. Austen hears the call to move over into the black but hesitates to move right away, remembering from his training that conditions outside the shelter are often much worse than inside. He is already so uncomfortable from the heat inside his shelter that he, “could not find a place to put his face that wasn’t almost unbearable.” Austen waits until he hears others moving around, then he peeks out of his shelter. Seeing others moving over the edge of the driveway into the black, he follows.

Around this time, the dozer the two operators are in catches fire as they are transitioning east down the Nacimiento road. The dozer operators extinguish the fire in the dozer cab with a fire extinguisher and continue further east down the road. Eventually the dozer reignites and finally stops approximately 75 yards down the road. The two dozer operators exit the dozer with a single fire shelter and take refuge on the road further downhill to the east.

The crews of engines 16 and 17 are now all gathered up in the black off the edge of the driveway, looking to redeploy their shelters. Many notice that their shelters have begun to delaminate and flake off during the repositioning. The smoke is thick and caustic as multiple vehicles, buildings, and equipment are burning around them. Several of the firefighters vomit from breathing so much smoke.

Gene is looking for his radio. Dustin, who was still holding his own, gives it to Gene. Dustin turns around and sees Gene’s radio on the ground and picks it up. At that moment, Pully’s voice cracks over the radio telling the crews to come down the drainage to the Nacimiento road where he is. Dustin notices that no one responds to the radio call. After the second call from Pully comes through, Dustin acknowledges the message for both Engine 16 and Engine 17. The crews begin heading down the drainage to the east, towards the road. They notice that Sam (Captain 17) is not following; he is sitting against a tree mid-way down the slope to the drainage bottom with his shelter partially covering him. Al and Kris tell Sam that they have to go. Sam responds to just leave him. Kris and Al finally get Sam up and moving, but he keeps stumbling and falling into the hot ash. Andie and Austen come back to help carry Sam to the road junction. Carrying Sam, who is pretty tall and heavy, is difficult in the steep-sided drainage with loose footing. The Engine 17 crew has to stop several times while carrying Sam down to the road junction. When they are in sight of the Engine 16 crew, which is already at the road, Gene, Dustin, Daniel and Scott assist in carrying Sam the last 30 yards to the road (Figure 8).



Figure 8. View from the Nacimiento-Fergusson Road looking west toward the guard station and firefighters emerging onto the road from the escape drainage southeast of the station. (Photo taken at 0839 September 8, 2020.)

All personnel are now away from the guard station, down on the Nacimiento road. Marty thinks to himself, “Hey, we are going to live through this.” Paulty radios Operations saying that they are down on the road and that crew members need medical attention. They are all thinking about how they are going to get out and get help for Sam, who has suffered burn injuries and is now having some difficulty breathing. Andie, as an EMT, is doing his best, but they have no medical gear, only some water, and no transportation; it is all on fire up at the guard station. Then Paulty shouts that a truck is just down the road to get them out. The burning dozer is blocking the road, so they need to carry Sam about 100 yards to the truck. The initial disbelief is replaced by overwhelming relief as they now have a way out of the smoke and heat. Al, Kris, Scott, Dustin, Austen, Daniel, and Andie carry Sam to the awaiting truck.

The Extraction

Chad (Night Branch Division V) approaches from the east in his Forest Service F-350 truck. A dozer is partially blocking the road, forcing him to stop a few hundred yards from the guard station. The two dozer operators are sitting on the road just downhill from their burning dozer when Chad pulls up. The crew members walk down the road to where Chad is parked behind the dozer. Chad directs everyone to pile in. Chad’s crew cab truck with a topper needs to get fifteen people, plus him, off the hill. Rene begins throwing Chad’s personal belongings out of the cab to make room for everyone, while Dustin empties the

truck bed. Finally, with seven in the truck cab and nine in the truck bed, they head east down the hill to the awaiting medical response. Sam, the most critically injured, is placed on a makeshift pile of shirts in the bed of the truck in a semi-upright position (Figure 9). Daniel and Gene work on taking vitals and trying to comfort Sam. As the truck departs at about 0850, they watch the burning shell where the engine bay once stood.



Figure 9. View from the back of the escape vehicle looking west toward the guard station. (Photo taken at 0849 September 8, 2020.)

Chad radios that they are heading down to the Nacimiento Campground with several injured, including one in critical condition. Medical resources begin mobilizing. The crews render aid to each other ensuring everyone is staying awake and okay. The road heading down has gotten worse since Chad's initial drive up. More debris litters the road making it more treacherous as they travel down. On the way down they are met by the first ambulance where they load Sam into the back of the vehicle to take him to Tusi Helibase for an air ambulance ride to the hospital. The rest of the crews continue down the mountain with Chad. As Chad meets the second ambulance, two more patients receive care and then are taken to the second air ambulance to transport them to the hospital. The remaining twelve firefighters are evaluated and released by the third ambulance at Stoney Valley.

The Broader Picture

Incident Objectives

The Wildfire Decision Support System (WFDSS) is a decision-making tool to support fire managers and agency administrators in developing a scalable decision system. WFDSS utilizes fire behavior modelling, economic principles, and information technology to support effective fire decisions consistent with resource, fire management plans, and incident objectives. WFDSS is based on multiple inputs and should be modified when the wildland fire dictates, both anticipated and predicted.

Incident objectives are specific to current fire conditions and outline what the Agency Administrator intends to accomplish on the fire. The first Dolan Fire WFDSS decision was published on August 20, 2020. There were numerous objectives listed, ranging from protecting the community of Big Sur, to the protection of recreational administrative sites. Protection of the five guard stations located within the vicinity was not included in the incident objectives.

The second WFDSS decision was published on September 4. The Nacimiento guard station (Station 16) was identified in the values at risk probability table. For a 14-day modeling scenario expiring on September 13, the modeled fire spread probability (of impacting Station 16) was 60 to 80 percent with no delaying actions, and 20 to 40 percent fire spread probability with delaying tactics. At the time of the September 4 decision, the fire was 3.1 miles away. The September 4 decision also included the FSPRO fire modeling run showing major fire paths in the vicinity of Station 16. The August 20 decision did not have these fire paths listed.

The Dolan Fire had five published decisions: August 20, September 4, September 11, September 15, and September 26.

Weather and Fire Behavior

Fire behavior on the LPF is largely modulated by marine layer dynamics. Regions of the LPF impacted by the marine layer tend to be cooler and wetter and experience less active fire behavior. The terrain on the LPF is rugged and dissected, with steep slopes and high-elevation ridges that act as a barrier to the cool, dense marine layer. This layer tends to get trapped in the low-elevation coastal regions on the west side of the LPF, but can also intrude farther inland via a gap to the north and influence low-elevation regions on the east side of the LPF.

A strong high-pressure system to the east of the fire generated extremely hot and dry conditions across the LPF in the days leading up to the entrapment (Figure 10). Relative humidity (RH) had been decreasing over the five days prior to the entrapment and nighttime RH recovery was poor. Coastal daytime temperatures were in the 100s. A near-record temperature of 119 degrees Fahrenheit was measured at the Pfeiffer Big Sur Campground ICP the day before the entrapment. Nighttime temperatures were in the 90s the two nights before the entrapment (Figure 10).

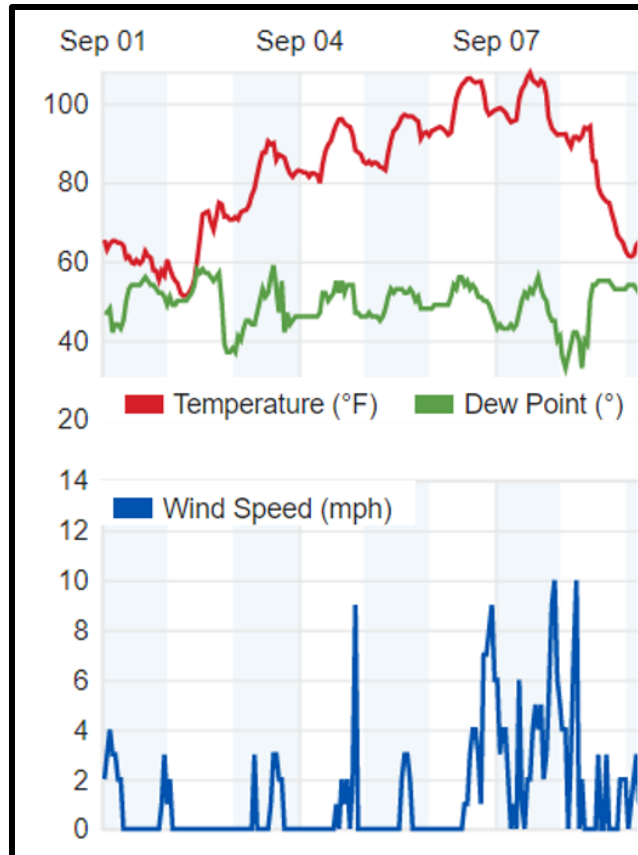


Figure 10. Weather observations at the Partington Ridge (KCABIGSU2) weather station, located at 36.20°N, 121.70°W, 2087 ft ASL, for the days leading up to the entrapment. (Data accessed from the [Wunderground website](#) on October 23, 2020.)

The fire had been actively burning during the night in regions outside of the marine layer (higher elevations and inland). The fire was moderated on the west due to the marine layer at the lower elevations and was only slowly pushing south. Growth to the east had been more rapid and was causing issues for the IMT. Most of the IMT focus was on the eastern edge of the fire, where the most active growth had been, and where there were numerous structures and other values at risk. A newly established ICP had to be relocated in the middle of the night on September 7-8 due to rapid fire growth to the east.

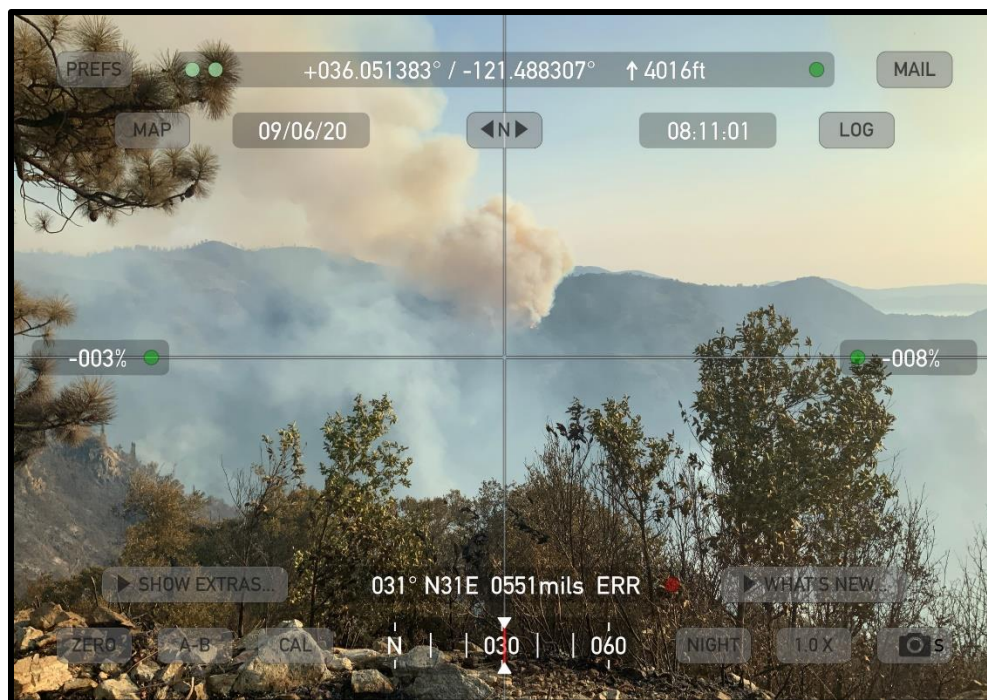


Figure 11. Fire behavior at 0811 on September 6. (Photo credit: Dana Skelly.)

The Incident Meteorologist (IMET) and Fire Behavior Analyst (FBAN) briefed in the days leading up to the entrapment on a strong frontal system forecast to bring high winds to the fire during the night of September 7. The front was a well-forecast, synoptic-scale weather feature that moved southwest out of Canada bringing cold temperatures and early-season snow to portions of Montana, Utah, and Colorado. This system also brought strong winds, which fanned the fires in Washington, Oregon, and California. The front moved out of Canada and eventually set up as a cutoff low-pressure system in the four corners region of Colorado over the course of a few days.

This frontal system brought northerly winds of 5 to 10 mph to the LPF on the night of September 7 (Figure 12). With decreasing relative humidity and near record-breaking temperatures over many consecutive days, fuel conditions were such that even a moderate increase in wind could substantially increase fire behavior. The fire doubled in size between September 7 and September 8 from 36,275 acres to 73,082 acres, with much of that growth occurring during the night (Figure 12). Although considerable fire growth was forecast by IMT personnel due to the approaching front, the run the fire made the night of September 7-8 was unprecedented on the LPF in recent history; it was substantially larger than any runs made during the Soberanes or Chalk fires.

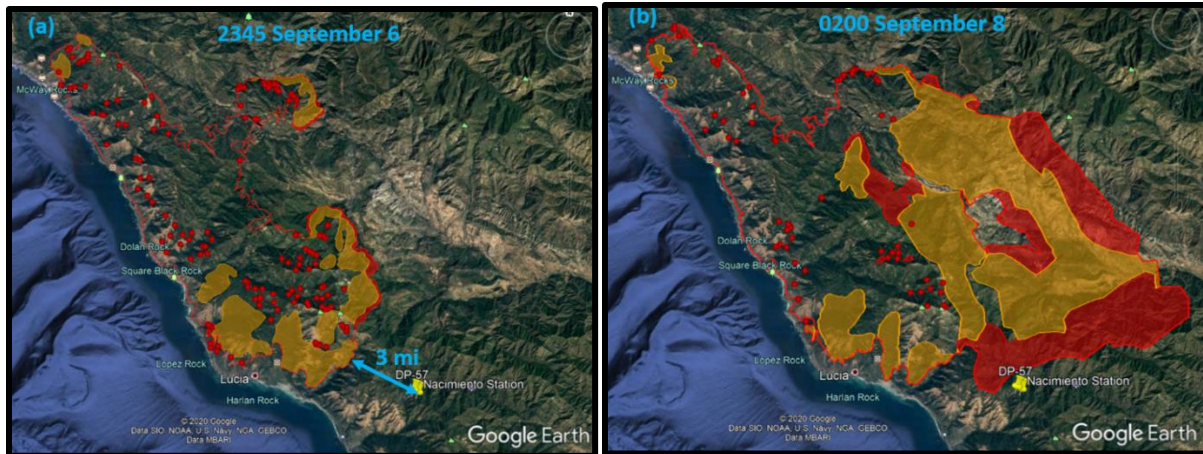


Figure 12. National Infrared Operations (NIROPS) data on the night of (a) September 6-7 and (b) September 7-8 and proximity to the Nacimiento guard station.

There was considerable growth toward the east and south on the night of September 7-8. The southwest edge of the fire crossed over the Nacimiento-Fergusson Road to the west (toward Hwy 1) of the guard station in a north-south progression around 0630, before fire impacted the guard station or DP-57. The fire had also crossed over the Nacimiento-Fergusson Road to the east toward Ft. Hunter Liggett earlier in the morning. The fire front that first impacted the Nacimiento guard station on the morning of September 8 came up drainage from the northeast.



Figure 13. Fire behavior near H-52/DP-57 at 0517 on September 8, the morning of the entrapment. (Photo credit: Scott Coulson.)

Fire History on the LPF

Fire history on the LPF has been documented since the late 1700s. In an average year, over most of the LPF's area there is no rainfall between April and late November and during the dry season the climate is marked by hot, searing winds and periods of low humidity. Numerous fires have grown to over 100,000 acres on the LPF. Fires to note from recent history are the 1977 Marble Cone Complex (174,320 acres), the 2008 Basin Complex (162,818 acres), and the 2016 Soberanes Fire (132,127 acres). There are records dating back to 1894 which show almost the entire area of present Monterey Ranger District (including the Dolan Fire footprint) burned over multiple events.

Progression maps from recent large incidents show nothing close to the Dolan Fire growth during September 7 and 8. The previous largest single-day growth was on the Soberanes Fire in 2016 with a 24-hour growth of 4,668 acres. The 24-hour growth of the Dolan Fire on September 7-8 was 36,807 acres, almost eight times larger than the Soberanes record.

Guard Station Culture

Guard stations are important fire resources on the LPF and have substantial historical significance. The LPF guard stations were established and staffed beginning in the 1930s through the 1960s. The Nacimiento station is a significant attraction on the LPF. Many current and retired LPF employees have worked at the Nacimiento station at some point in their careers and carry fond memories of the place. Gene, the Nacimiento station Engine Captain, really took to the history of the station and became very attached to it. He took pride in the station, his place in the history of it, and proudly displayed various historical items such as pictures, past supervisors and crews, and other memorabilia. He was part of a proud tradition at the station and really enjoyed everything about living there. The Nacimiento guard station was a part of his identity and purpose on the LPF. Various meetings and other events have been held at the station, visitors traveling along Hwy 1 stopped in to tour the facility, and, due in part to Gene's hospitable personality, the station became a meet up location for fire personnel during the Dolan Fire. Likewise, Pacific Valley (PV) Engine Captain, Sam, took great pride in his station at PV. He kept the station and grounds in top condition, and being located on Hwy 1, the PV guard station represented the LPF well. Sam was not the type of station captain to be chummy with the other station captains on the district, but like Gene, had significant pride and attachment to his station.

Gene knew that the Nacimiento station had survived previous fires and remembered the slides he formed during those events. He remembered the amount of prep completed and used in protecting the station; this time more prep had been completed. He also remembered the fire behavior slides inside the station footprint. This influenced his thoughts and decisions about the feasibility of protecting the station during the Dolan Fire. Engine 17 and a hotshot crew had helped in implementing the structure preparation, and numerous operations folks had been in and out of the station leading up to the entrapment (Division Supervisors, Branches, Ops Chiefs). These encounters were always about the bigger picture and not specifically about the particulars at the station. There was no clarification if the preparation at the station was complete, if the plan was to turn on sprinklers and leave, or if the plan included an option where you could safely stay and defend it. Consequently, a structure protection plan was never completed for the Nacimiento station. Additionally, folks including the team's Safety Officer (SO), thought that the plan was to evacuate the station if fire threatened it, and did not think anyone would stay there to try and defend it. The SO shared his concerns about the defensibility of the station with Sam but was disrespectfully brushed off. This angered the SO, but he did not follow up because of the high level of trust he had in his team's Operations team to do the right thing. Also, his experience in general with Region 5 fire folks was that they simply do not respect Safety Officers; he felt it was a bigger cultural issue than this one individual.

Both captains had been at their stations for many years. Gene is personable, the kind of supervisor that puts a lot of energy into caring for his folks, even mentoring and advocating for employees long after they have left his module for other positions. His assistant did not impose a strong leadership influence on the module, resulting in Gene being more of the centralized leader of the station. Most of his crew were relatively young in their fire careers. The one exception was Rene, who still did not have near as much experience as Gene or Marty, but she had just returned from successfully serving an off-forest detail as an AFEO.

Sam is an authoritative leader with a bit of an old-school philosophy that "leaders lead, and followers follow." Al, Sam's new AFEO, came in with solid experience. Sam was allowing Al to take on more of a

leadership role than what Sam might normally permit. However, the overall culture of the module was one where Sam preferred to keep his folks close to home, together, and under his command. Crew members might question each other, but they didn't question Sam. Sam was the kind of guy who could stare through a Type 1 Safety Officer and walk away if he didn't like what the person had said or asked.

Learning Review Team Members

Randy Draeger, CRP Team Leader
Eric Zanotto, Learning Team Leader
Mark Burgeson
Seve Flores
David Maclay-Schulte
Josh Northup
Arley Paulus
Tony Petrilli
Kevin Pfister
Jason P. Thompson
Natalie Wagenbrenner
Mike Wicks