2. SEQUENCE OF EVENTS

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BC #1 spoke with HFEO #1 while walking to his vehicle at Monterey Headquarters, and advised him of the fire dispatch. HFEO #1 asked BC #1 where Palo Colorado Canyon Road was located, to which BC #1 responded, "*head south on Highway 1 and look for the smoke*".

At 12:51 PM the BEU ECC announced to all units responding to the Colorado fire to use White Fire 3 for the Tac Net.

During line construction on Division S, D4641 created a berm (or windrow) of cut material. D4645 had to move the berm because the material was building up on the downhill side of his blade, pulling him into the drainage. D4645 communicated his difficulty to D4641 and requested that D4641 straighten his blade to reduce the berm/windrow. D4641 straightened his blade and continued down the slope. D4645 lost sight of D4641 due to the topography.

CAL FIRE D4641 constructing line on Division S

At 3:50 PM, the OSC advised the IC that new radio frequency assignments were implemented; CDF Tac 4 will be assigned to Division A and CDF Tac 12 to Division M, White Fire 3 remained the Tac frequency for Division S.

As D4645 continued downhill along the constructed dozer line, he began sliding then stopped because he could no longer safely move due to terrain and loose soil conditions (see Attachment 6.E.1 Soil Report). HFEO #2 nosed his dozer down slope and set his blade down into the soil for safety, exited the cab and notified Division M, via radio, that he was stuck and would need assistance getting out. HFEO #2 stated he was concerned about the dozer's stability on the steep slope.

CAL FIRE D4645 stuck on Division S (center of picture) prior to D4641 Rollover

CAL FIRE D4645 stuck on Division S

D4641 attempted to back up; however, his tracks began to dig into the loose soil and realized he was committed to continue down slope before he could return to D4645's location. HFEO #1 advised D4645 that D4641 would need to go all the way down Division S and back around to the top of the ridge (via Ray Ridge Road). D4641 realized he could not see the terrain below him and stopped. D4641 then requested assistance from ground resources on Division S to help guide him by radio, the last 600 feet of the 94 percent plus spur ridge. (see Attachment 6.C.5 Detailed Area of Accident Site)

FC #2, CAL FIRE Engine 4661, contacted D4641 and advised him to stay where he was until they could move engines that were below D4641 so they wouldn't get hit by rolling material.

D4641 continued to the bottom of the ridge line on Division S, which is now covered in brush from hand crews doing line rehab. The slope at the bottom portion of this ridge is approximately 85 percent measured by a clinometer. Note the dozer on the right is D4645 and the dozer on the left is D4643 which was used after the accident to anchor D4645.

CAL FIRE Fire Apparatus Engineer (FAE #1), the company officer on CAL FIRE Engine 4677, was observing D4641 progress down the ridge of Division S. Noting that the dozer was having difficulty and losing traction, FAE #1 contacted HFEO #1 on the radio and advised him that he would make his way over to D4641's location and talk him down the ridge. FAE #1 observed that as D4641 continued his descent, he was pushing a full blade of dirt and had his rippers down but was still sliding to the side. FAE #1 directed the dozer to the operators left to avoid a cliff and an outcropping of rocks. D4641 eventually made it to the bottom of the drainage and commented to FAE #1 that it was so steep that he didn't want to get out of the dozer to scout a route and was thankful for the assistance.

CAL FIRE D4641 during descent on Division S (Note large berm of soil in front of blade)

D4641 was on his way back to Division S when he met face to face with Division M on Ray Ridge Road. HFEO #1 stated *"I'm not going back there, I have no reason to go back down that cliff again, that wasn't comfortable."* HFEO #1 then said, *"I gotta go get* (D4645) *out."* They discussed the hazards of safely pulling D4645 back onto the crest of the ridge. Division M stated, *"…You know what you are up against, you know it's steep and dangerous. Just watch yourself. Be safe and don't do anything stupid. If you guys have to watch that dozer roll down the bottom of the cliff I am fine with that as long as you and* (D4645) *are standing on the ground."*

D4641 proceeded down Division S and met with D4645. HFEO #2 stated, "*He* (HFEO #1) *gets there and he's making fun of me cause it's a going on[sic] joke that I haven't been stuck in three and a half years with the state, you know, I pulled him out so he was pretty happy he was going to get to pull me out*". They developed a plan to build a bench below D4645 and use another dozer to winch D4645 to the bench. Both HFEO's discussed the use of the winch cable on D4645 but concluded it was frayed and not a safe option. HFEO #1 contacted Division M and said, *"We gotta lot of work.* (D4645's) *in a bad spot and I gotta build a bench and we are going to need a couple extra dozers."* Division M advised that he had a 44,000 lb. excavator that could help out. HFEO #1 replied, *"No, just give me two extra dozers; two more dozers and we'll be fine."*

Aerial view of cut bench where D4641 was working towards D4645. Note
The upper left dozer is D4643 used to anchor D4645 after the accident.

While waiting for the additional dozers to arrive, D4641 proceeded down the spur ridge approximately 100 feet below D4645 and turned around facing towards D4645. D4641 began constructing the bench to solid ground by pushing slough material, some of which went over the side slope.

HFEO #2 positioned himself 15 to 20 feet behind D4641 to watch the operation. He did not have a portable radio and was not in verbal communications with D4641. HFEO #2 observed that D4641 "*…started to out-slope a little bit instead of slope against the mountain. He didn't really have the proper slope when he was doing it. It* (D4641) *was leaning the wrong way."* On D4641's second push, *"…with one more push and um, it completely drops the right track off. He pushes forward, right track slides off on the soft side off the fill side."* (The soft side or fill side is the downhill side of the slope). HFEO #2 waved his hands to alert D4641 of the situation but did not know if HFEO #1 noticed him.

D4641 stopped. HFEO #2 thought to himself that D4641 was going to now wait and also be pulled out by the additional dozers. Moments later the back-up alarm activated, the RPM's increased, and the dozer's tracks began to move.

HFEO #2 observed *"… the left side track goes forward and the right side track goes back. His dozer slides off the front of the mountain. It does a very slow roll to the right. His tracks are still rotating very rapidly. He goes over on his top and his tracks keep rotating and continue down the mountain to the bottom."*

Point where soil became loose and Dozer 4641 started its decent.

D4641 rolled side-over-side 154 feet down a 83 percent to 94 percent slope into a drainage before coming to rest During the plummet, the glass broke out from D4641's left side window. Towards the bottom of the drainage, D4641, while rolling mid-air, struck a large tree causing it to flip end-over-end. Either the sudden change in rotation caused by the impact or the centrifugal forces of the flipping and rolling pulled HFEO #1 from his seat (while still seat belted by a single lap-belt). The upper left rear of HFEO #1's unprotected head struck the metal mounting bracket of the heavy-mesh brush guard protecting the left side window and loose items in the cab of the dozer struck HFEO #1.

<u>Simulated</u> movement within cab of CAL FIRE D4641 during rollover (Note single lap belt)

<u>Simulated</u> movement within cab of CAL FIRE D4641 during rollover

<u>Simulated</u> movement and impact area within cab of CAL FIRE D4641 during rollover.

HFEO #2 went down to D4641 and assessed the need for medical assistance and rescue of HFEO#1. He observed the diesel engine was not running but the electrical system was still active as he saw the fans, windshield wiper, and heard the back up alarm still activating. HFEO #2 attempted to kick in the dozer's front window but could not gain access. He looked through the window at HFEO #1 who was still seat belted into his seat and appeared to be breathing. As he did not have a portable radio, HFEO #2 climbed back up the slope 154' to his dozer and used D4645's mobile radio headset to notify Division M of the accident.

D4645 advised Division M of the accident stating that D4641 had rolled down the hill on the *"left flank"*. Division M knew D4641 and D4645 were working somewhere in Division S, which was actually the right flank. Division S #2 was not aware that both dozers were working in his Division, could not see the dozers, and did not know they were assigned to his Division. Because of these misunderstandings, there was difficulty in determining the location of D4641.

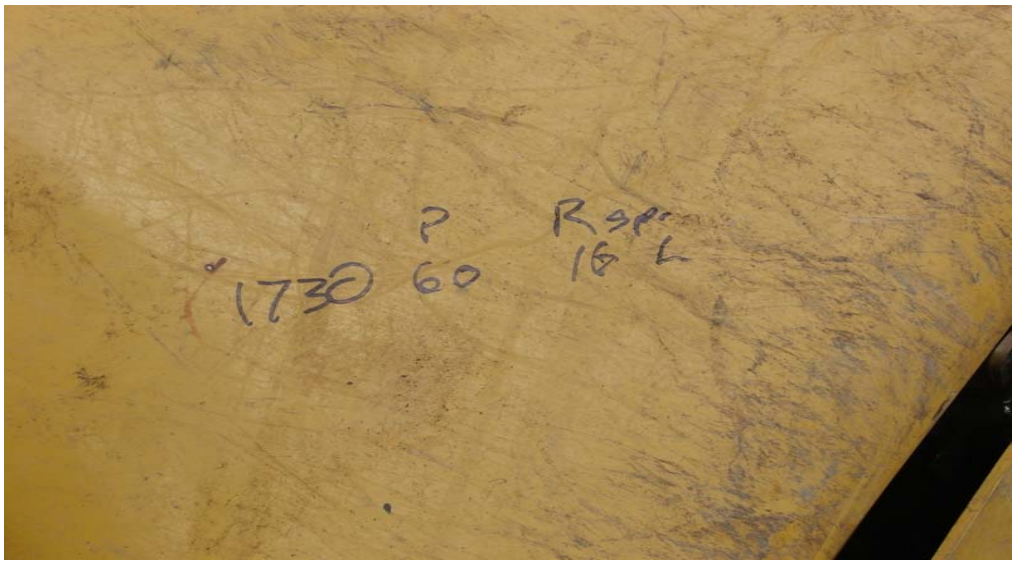
CAL FIRE D4641

Helitack personnel from CAL FIRE Copter 106 and CAL FIRE Copter 406, who were working on the ground on Division M, overheard the radio traffic, and quickly responded to D4641's location and provided extrication and immediate medical assistance to HFEO #1.

At 4:34 PM, the IC advised the ECC of D4641's rollover and requested an air ambulance.

Arrangements were made to transport two CAL FIRE paramedics and Advanced Life Support (ALS) equipment from CAL FIRE Medic Engine's 1681 and 1672 that were on the fire. Copter 406 transported the two paramedics to the scene while Copter 106 prepared for a short-haul rescue. Upon the paramedics' arrival, they assessed and provided ALS care to HFEO #1. Air Ambulance CalStar 7 landed at a designated landing zone and stood by for the patient transfer to the hospital.

At 5:30 PM a notation was written on D4641 with vital signs of HFEO#1. The pulse was recorded as 60 and respirations were recorded as 16 and L (labored).



Vital signs recorded on CAL FIRE D4641 at 5:30 PM

Copter 106 performed the short haul rescue and transferred HFEO#1 to Air Ambulance CalStar 7, which transported HFEO #1 to San Jose Regional Medical Center, arriving at 7:10PM.

CAL FIRE Copter 106 during Short Haul Rescue

On October 9, 2007 at 2:40 PM, HFEO #1 succumbed to his injuries at San Jose Regional Medical Center. HFEO #1's fatal injury was from a single violent impact to the head from blunt force trauma.

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At 12:51 PM the BEU ECC announced to all units responding to the Colorado fire to use White Fire 3 for the Tac Net.

At 12:54 PM, BEU Prevention 4627 overheard the dispatch of the fire and responded from his office at the BEU Carmel-Highland Fire Station. The BEU ECC requested that Prevention 4627 try CDF Command 2, Tone 2, to see if it would work at the incident.

Palo Colorado Canyon is located near the western coastal area of San Benito-Monterey Unit. It is bordered by Carmel to the north, the Los Padres National Forest on the east, Big Sur to the south, and the Pacific Ocean to the west.

The topographic features throughout the Palo Colorado Canyon area can be described as extremely steep with broken terrain, multiple branching spur ridges, and seasonal creek drainages. Slopes range from 42 percent to an extreme 94 percent with adjacent slide slopes between 80 percent-90 percent.

At 1:02 PM, CAL FIRE Prevention 4627 arrived on scene and reported approximately two acres of vegetation, 1.8 miles east of Highway 1, with the fire half-way up the ridge and backing into the canyon. T/D 4641 requested information regarding best access to the fire.

At 1:10 PM, CAL FIRE Prevention 4627 updated the report on conditions. The structure fire was located at 37715 Palo Colorado Canyon Road and was 70 percent destroyed and 5 acres of vegetation were involved.

CAL FIRE Air Attack 460 reported the fire was on the western aspect of a steep slope and was approximately four acres with potential growth to 50 acres. He requested two additional air tankers and one additional helicopter.

Colorado Fire from CAL FIRE AA 460

At 1:18 PM, CAL FIRE BC #1, made a rolling request for three additional strike teams of crews, in single increments, and two strike teams of agency Type III engines. Shortly after making this request, BC #1 advised the BEU ECC he was now the Colorado Incident Commander (IC).

Upon his arrival, the IC proceeded up towards the fire's left flank (Ray Ridge Road) and made face to face contact with Prevention 4627. The IC inquired as to whether Prevention 4627 would assume the Division Group Supervisor role for structure protection. Prevention 4627 assigned a couple of engines at some structures and about a half hour later he left the area. Prevention 4627 was then assigned to Staging Area Manager for a staging area to be established at Hwy 1 and Palo Colorado Canyon Road.

The IC noted that two hose lays were in operation, one to the north on the fire's left flank and one hose lay to the east on the fire's right flank. The IC assigned the left flank as Division A to CAL FIRE Engine 4681, FC #1, and the right flank as Division S to CAL FIRE Engine 4661, FC #2. The IC proceeded to Division S and directed them to continue hose lay on the right flank.

CAL FIRE BEU Battalion 4607, BC #2, arrived on scene and was assigned by the IC to Division M at the head of the fire. The IC requested Division M to scout the division and report what the fire was doing and what resources were needed. Shortly thereafter, Division M advised that he could use a total of four dozers.

At 1:25 PM the IC requested three additional dozers.

CAL FIRE T/D 4641 reported he was in the area, switched to the tactical frequency, and was assigned by the IC to Division M. T/D 4641 unloaded his dozer at the Mid Coast Fire Brigade Station on Palo Colorado Canyon Road. A local resident directed D4641 to access the fire via Green Ridge Road. He traveled on Green Ridge Road approximately 1.5 miles to the top of the ridge and headed west 0.75 miles along the ridge top to the head of the fire. HFEO #1 contacted Division M and was directed to construct direct line westerly, across the head of the fire.

Parking location of T4641 at Mid Coast Fire Brigade Station

At 1:38 PM, the IC met with Division S and was displeased with the progress of the hose lay, which had proceeded about 30 feet. Division S expressed concerns about the spot-fires below the road on Division A and the steepness of the terrain on Division S. The IC assigned a CAL FIRE Helicopter to perform water drops on the spot fires in Division A and noticed a Helitack crew working the spot fires with ground tools.

After a brief discussion, LPF Engine 19 advised the IC his crew could perform the hose lay as requested on Division S. The IC reassigned FC #2 and CAL FIRE Engine 4661 to Division A and designated LPF Engine 19 (Division S #2) as the new Division S, to be supported later with another USFS/LPF engine and a USFS/LPF hand crew still enroute.

At 1:58 PM, CAL FIRE T/D 4645 notified the BEU ECC that he was in the area. The IC assigned D4645 to Division M and instructed him to make access to the fire via King Road to Ray Ridge Road (see 6.C.4 Map Travel Route)

Along the route, HFEO #2 met Division M, who directed him to proceed east and tie in with D4641. Both dozers were assigned to improve line along the head of the fire in Division M and then proceed down the spur ridge on Division S. Division M had originally believed that D4641 had constructed direct fire line from the bottom of Division S and across the head of the fire in Division M.

View of Division S at the top of the spur ridge

When D4641 and D4645 met on Division M, they proceeded down a spur ridge on Division S (the fire's right flank) constructing direct and parallel fire line. D4641 was in the lead.

Colorado Fire Division S (Note upper portion of ridge with dozer line construction)

The slope at the top of the spur ridge on Division S was calculated to be approximately 64 percent, the side hill was approximately 83 percent; and the pitch of the constructed line was 62 percent. The prevailing ridge line (spur

ridge) on Division S varied in slope from 64 percent to 85 percent and tapered to 42 percent midway down the slope.

At 2:01 PM, the IC established an Incident Command Post (ICP) at the Mid Coast Fire Brigade Station and requested a Public Information Officer, a Monterey County Sheriff representative and a Staging Area Manager to report to the ICP.

Throughout the incident, the IC stated he was distracted from concentrating on the management of the incident by numerous telephone and radio calls and other external interruptions. The IC stated he was never able to relocate to a position with a better view of the incident and isolate himself from unnecessary external distractions.

At 2:07 PM, Colorado Air Attack advised the IC the fire had grown to 30 acres.

Colorado Fire photo from CAL FIRE AA 460

The IC attempted to establish the Operations Section Chief (OSC) position by using personnel already at scene. At approximately 2:20 PM the IC discussed the OSC position with USFS/LPF Division Chief (D-1). D-1 stated he was not certified in the position and declined. D-1 stated he was carded as a Type 3 IC and offered to assist and was assigned as the Deputy IC.

Upon the arrival of CAL FIRE Engine Strike Team 9160C, Battalion Chief #3 accepted the assignment of OSC.