

Redding IHC Buggy Rollover

FACILITATED LEARNING ANALYSIS

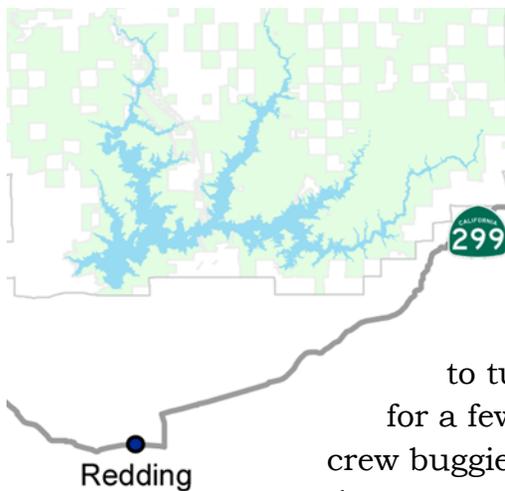


Redding Interagency Hotshot Crew

The Redding Interagency Hotshot Crew (IHC) is one of four developmental training crews in the country. They have a unique mandate and history. Founded over fifty years ago, they are a team of twenty wildland firefighters with some of the highest levels of preseason training in the country. They train in multiple areas critical to wildfire: leadership development, large fire tactics and strategies, medical emergencies and all risk incidents. The permanent leadership staffing for 2019 consisted of one Superintendent, two Captains and two Squad Leaders. The fifteen detailed firefighters joined the crew for the fire season on April 15th. These crewmembers traveled from the Pacific Southwest, Southwest, and Eastern Regions to work as one cohesive team. The training crew works directly for the Regional Office in Workforce Development and Fire Training. With detailers from all over the country, the Redding IHC has many different chains of command.

Tuesday, April 30th

On the third week of training, the Redding Hotshots left their duty station in Redding and drove just over an hour along Highway 299 east of Burney. The crew carriers, known as ‘buggies’ (C-21A and C-21B), traveled up a two-lane mountain road to mixed conifer



forests. They climbed to over 3000’ for a full day of field exercises consisting of chainsaw work and digging line.

Around 1600, the hand crew loaded up into the buggies and left the project worksite. They stopped for fuel at a local gas station in Johnson Park. The C-21 Superintendent truck was the first of the three vehicles to turn west onto Highway 299 towards Redding. After waiting for a few cars to pass C-21A followed, with C-21B behind. Both crew buggies would be due for replacement in 2020, but they looked nearly new as they drove down the road in formation.

The buggies passed through the town of Burney and slowly increased to highway speeds of 55 mph. The Squad Leader for C-21A drove southwest along a straight stretch. He could see the matching C-21B behind him in the side mirror. The mountain highway dropped off steeply to the right as they passed through open Ponderosa pine stands. Ahead of them, a 1996 gold Lexus sedan started to drift across the yellow line; it seemed to him that the driver was looking for a pair of dropped sunglasses, maybe even had fallen asleep. The driver later said she had been shopping in Redding, had been listening to a book on tape, and had no memory of the moments leading up to the crash. *The driver of C-21A thought she was going to correct.* He edged to the right.

“I think we both said ‘Oh sh%it!’ together when we realized she wasn’t going to correct.”

- C-21A Captain

The seven crew members in the back of C-21A quickly looked out the windows to see what was in the road. A handful saw the flash of the Lexus pass on the left and continue to drift into the path of C-21B through the rear windows.

The Squad Leader of C-21B (driver) had just shifted into sixth gear as one of the crew members in the back of the buggy wrapped up a cautionary tale about 'weed whacking' and dog poo. The crew was already close after spending nearly a month training together. There were eight crewmembers riding in the back of C-21B, and in the cab were the Captain and Squad Leader.

The Squad Leader saw C-21A swerve ahead of him and then a gold Lexus sedan came into view and was drifting "100%" into the lane in front of them. *"It almost seemed like she was accelerating."* He immediately braked and maneuvered the buggy as far as he could on to the shoulder to miss the car, and it passed from view to his left. *"I got over as far as I could, maneuvered like evasive-style - engine academy - got over as far as I thought possible, I thought she was going to scrape us, but not hit us."* It looked close, but they thought they had avoided the

Driving While Fatigued

A driver might not even know when they are fatigued because signs of fatigue are hard to identify. Some people may also experience micro-sleep, a short, involuntary burst of inattention. Micro-sleep of just 4 or 5 seconds can result in a vehicle traveling the length of a football field if the driver is driving at highway speed.

The following are signs and symptoms of drowsy driving, according to the American Academy of Sleep Medicine:

- Frequent yawning or difficulty keeping your eyes open
- "Nodding off" or having trouble keeping your head up
- Inability to remember driving the last few miles
- Missing road signs or turns
- Difficulty maintaining your speed
- Drifting out of your lane

Choices made when in control of a vehicle can be the difference between life and death, for you and others. Choose wisely.

-The National Safety Council

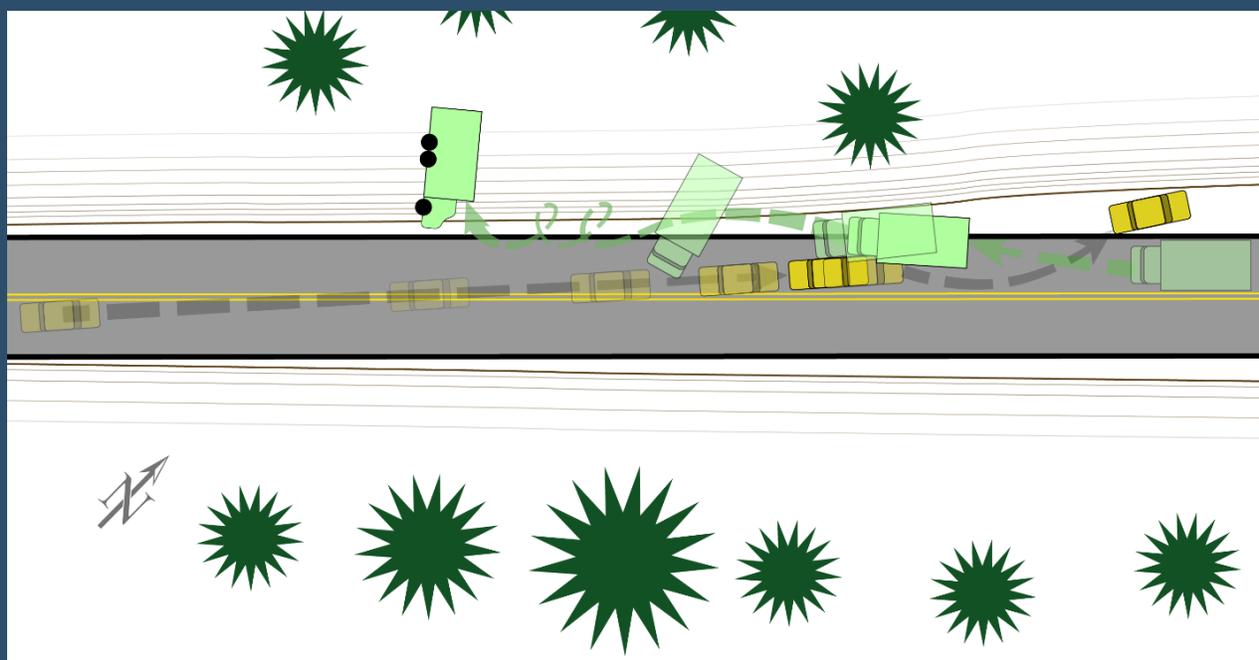


Diagram 1. The Lexus driver drifted directly into the path of oncoming traffic.

oncoming sedan. *“I thought she got past us, we were able to get a bit more than halfway off the road.”*

Then they felt a jarring impact to the buggy. Then they felt the skid, and they started to roll.

The Lexus had struck just underneath the driver’s door, stripping off the saddle fuel tank before impacting the crew compartments. An observer would have seen it crumple as it impacted the driver’s side storage bins, full of gear and 5-gallon water containers, then continue to wedge underneath the larger vehicle. It hit the outside dual with so much force it popped the tire off and destroyed the rim, leaving a V-shape in the thick metal. The impact lifted the driver’s side of the buggy and spun the rear of the heavy vehicle off the highway. At that point, the roll was inevitable. The driver had done all he could to avoid the accident. They were all passengers for now.

“I looked back and saw the B-Mob begin to roll...” – C-21A Crewmember

C-21A module watched C-21B buggy roll through the rear windows in disbelief. *“We saw the accident in the rear view.”*

They had trained for a medical situation, but their own crew being involved was too surreal. Just the week before they had gone through extensive medical training. It had included two lengthy days of classroom time, later described by the C-21 Superintendent as *“a trauma EMS course compressed into two long class days,”* and then *“every kind of field medical scenario you can imagine, from tree strikes to burnovers to vehicle crashes.”* It also included a Multiple Casualty Incident, or MCI. Now they watched as the multi-ton truck tipped, showing first its roof, then its driver’s side, then its undercarriage to the stunned crew in C-21A. By the time it slipped from their view as they turned around, C-21B had already rolled several times and slumped off the shoulder embankment edging the highway.

Both of the overhead in C-21A reached for the radio to notify the Superintendent.

The Superintendent had pulled out of the gas station just ahead of the crew buggies and headed west on Highway 299. It was his day to get dinner on the table back home. Should he stop at the store or order Thai food when he got closer?

“Hey... Buggy B has just been involved in a vehicle accident, we are going back to check and I am going to notify Shasta Unit,” was the transmission that came over the crew channel. The Superintendent found an area in the roadway to pull over, made radio contact with A Captain and responded that he “copied” and would turn around. The Superintendent could hear A Captain attempting to make contact with emergency traffic to CALFIRE Shasta Trinity Unit (SHU) and he changed the radio to SHU.

Turning on the red lights, the Redding Superintendent turned around and drove about a quarter mile back down the road. Traffic had come to a standstill in both directions.

Logging trucks and civilian cars were lined up in the eastbound lane, forcing him to drive in the opposite lane. He could not see the green buggy with the crew logo. Where was it? As the scene came into focus, he saw only the gray undercarriage of the buggy. It was laying on its side hanging on the edge of the highway, and the emotions began to hit.

Inside of the sliding C-21B buggy time slowed down – one of the crewmembers recalled, *“I was having whole conversations in my head.”* Another remembered, *“for me there was denial – like,*

there’s no way...” The driver recalled, *“you hear stories about this but it never happens to you...thinking that pretty much the entire time.”* They suddenly pitched hard towards the

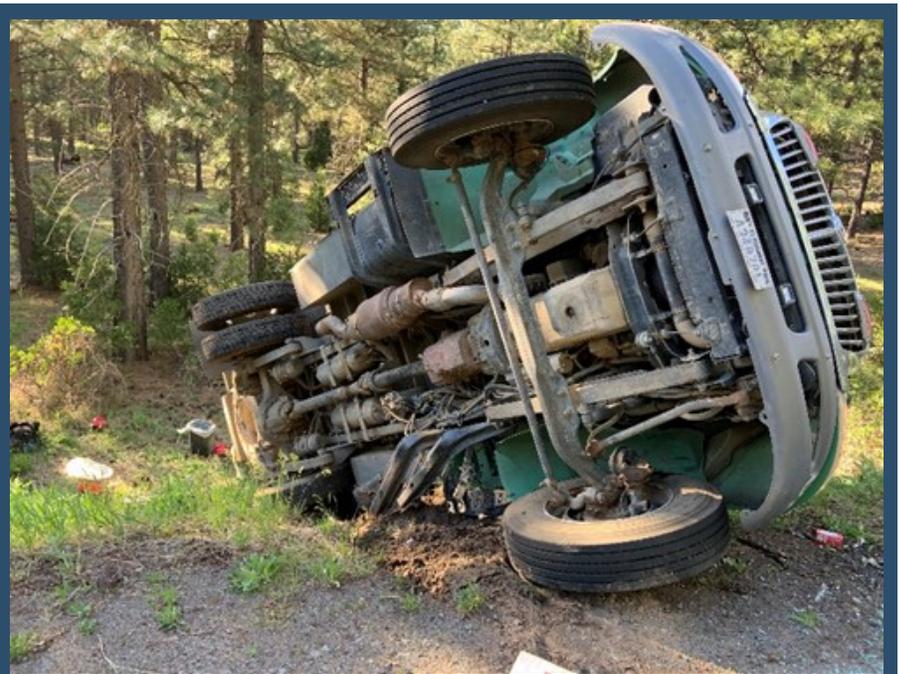


Photo 1. The crew buggy came to rest on the steep embankment.

passenger side as they began to roll. In the front of the cab, B Captain felt the impact of the rollover as his door hit the ground. *“I was kind of bracing... then we start rolling, we’re starting to tip. I started to brace against the center console and my seatbelt, we hit, my arm hits the ground and glass went everywhere. Then it’s just impact...impact...impact and we come to a rest.”*

B Squad Leader had a different view from the driver’s seat. *“As it hit we came around and I was thinking ‘TUCK!’...I had my eyes open but my perception of*

things was just white. I felt every BAM...BAM...BAM. I remember thinking that the impacts were far apart.” Several from B Module said that it felt like there were long pauses between each impact, as if the heavy truck was moving *“like a slinky”*. Anchored to the rolling vehicle by their fastened seatbelts, they could only hold on.

A crewmember sitting in the second row reported the, *“... windows exploded, I know I swallowed some broken glass, something hit me in the side of the head.”* *“I didn’t think it was going to stop,”* one remembered, *“I just grabbed my head and tucked because I saw everything flying around.”* For another crewmember, having felt the series of impacts and the continuous rain of broken glass, he had a sudden thought:

“I looked out my window and saw the pavement coming up towards me”

- B Captain

“I was limp for the first roll, second roll I grabbed the box overhead and then rode it out - tried to brace, the third roll the window exploded”

- C-21B Crewmember

"Initially I was scared sh#less because I didn't realize there was that much reinforcement in the box - you know I'm thinking like a U-Haul truck, I'm thinking we're all going to get squished, and I'm thinking we're all going to die"

- C-21B Crewmember

A Buggy parked across the highway from the overturned B Buggy. Several logging trucks had stopped on the highway above halting all westbound traffic. The A Captain immediately began making radio calls. He had years of experience in the local area, having worked on a nearby district before joining the crew. However, they were in a location with poor radio coverage. He tried to call dispatch on the local repeaters, trying several channels with only scratchy communication. On the other end of the radio the dispatch center could only pick out one word at a time... 'Highway 299'... 'accident'. The US Forest Service trains its employees to utilize radios to start emergency response, as they frequently operate in areas without any cell phone coverage. However, the local unit labeled their line-of-sight radio channels as 'tones', when only three of the channels were true repeaters. Local counties and smaller units not needing to transmit over long distances or to cover broken geography may call their command channels 'tones' or 'repeaters' when in fact they are 'line-of-sight' or 'car-to-car.' This gap in terminology layered one more challenge on the A Captain, as he tried repeatedly to contact the local dispatch center on several different channels.

"The F#\$@ing tones weren't working!" - A Captain

There was a benefit to these attempts though. Multiple responders traveling the Highway 299 corridor or working at stations nearby heard the repeated calls to dispatch and responded in minutes. They could pick up the transmissions loud and clear. A Captain did eventually reach the Redding Interagency Dispatch Center, but as emergency units self-dispatched and arrived on scene, it appeared their earlier transmissions out had been successful. This confirmation bias was present in another small but important way. Despite the traffic, responders, and local residents on scene, there is no record of 911 ever being called - by anyone. The public driving by, seeing the A Buggy and the Superintendent's truck with their emergency signals on, did not bother to call. They assumed that responders were already on scene. Once the dispatch center had the location, emergency units were officially dispatched.

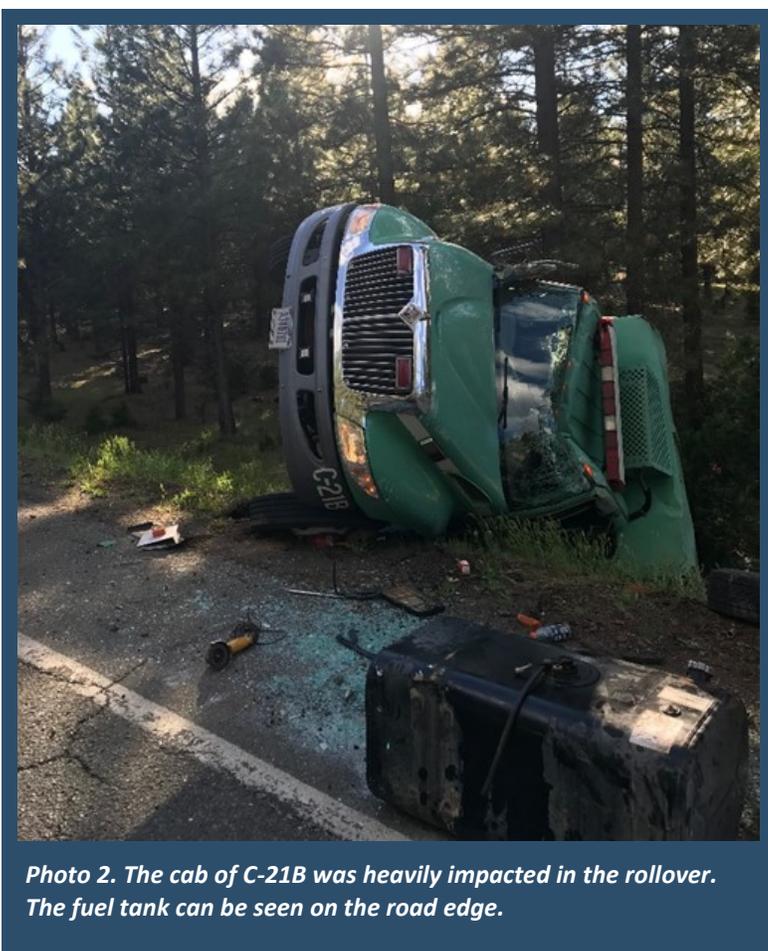
A Captain took on the role of Incident Commander (IC). He assigned the nearest crewmember to take notes and A Squad Leader as the primary Emergency Medical Technician (EMT). He designated the three EMTs to A Squad Leader and assigned tasks to the rest of the crew. The A Captain grabbed two of the crewmembers, made sure they had their radios, and said, "close the road!" This quick action helped secure the scene following the crash.

The A Squad Leader knew that he had more patients than responders. He also knew that he had a good pool of medical knowledge and ability - three EMTs in addition to himself, and the entire crew had last week's significant medical training fresh in their minds.

The A Squad Leader opened the crew door and gave orders to the three EMTs to get medical gear and assist him. He told the remaining crewmembers to stay put. *“I knew they were all eager to help, but my first initial thought was not to expose a bunch of people to one: the roadway, and two: what may have been seen in the back of the other module.”*

The EMTs gathered medical gear, the backboard, and the trauma kit. Personnel who would be working on the roadside took reflective high-visibility safety vests.

The A Squad Leader met the Superintendent as he arrived on scene, and he pulled the third trauma bag from the Superintendent’s truck. As the A Squad Leader approached the overturned buggy, he did not know what to expect. *“The first person I saw, [B Captain] he was already on top of the truck. He had to climb up and out. Truck was on the driver’s side, so he was climbing up to get out his window and was already up on top. He was making his way out, no visible blood, so I continued to the back of the truck to look at the people in the back, in the box.”*



There was dread about what they would find. The back of the crew buggy was filled with people, gear, and lots of equipment. Passengers were only secured to their seats by lap-belts. The very real possibility of finding friends with grave injuries was on their minds.

Back inside of the rolled crew buggy, people were trying to make sense of what had happened. In the front cab, the B Captain, now hanging from his seatbelt above the driver, called his Superintendent on the radio to let him know what happened. *“He was kinda propped, holding himself up. And he was having some trouble with his seatbelt,”* the B Squad Leader/driver recalled. *“As soon as I could help him out [of the seatbelt and truck], he was gone.”* The B Captain remembered, *“He unbuckled me, I briefly looked in the back, I heard a lot of commotion...there was a black blob of people kinda piled*

up. I realized I had to get out and try and open the back door.” The B Squad Leader exited downward through his exploded window, through a gap where the cab was suspended off the uneven ground. Inside the cab, the bowed front windshield and ceiling left barely enough room for him.

In the rear of B Buggy, things were no better. On the passenger side the upper gear storage rack had failed. The force of the rollover had sheared off the aluminum pop rivets,



Animation 1. The aluminum pop rivets (inset) sheered in the rollover, allowing the shelf to collapse and block the window emergency exit. [www.vimeo.com/339864051]

and gear was strewn everywhere. One crewmember remembered coming around and thinking that the gear bag in his lap was a person, and held onto it. For others, the shelf failure had larger consequences – their emergency exit window was blocked, the shelf wedged at 45 degrees by gear and bent metal. Half the crew was

suspended by their seatbelts, shattered glass was everywhere. They had finally come to a stop. *“There might have been a split second of calm for me, but that was right before [fellow crewmember] unbuckled himself. Then he fell on top of me. From my perspective, he was borderline unconscious. He’s on top of me, my leg was wedged in, and I do not want to move him because of his possible injuries.”*

For those in the back of the buggy, the urge to get moving came from the need to care for their crewmembers. Immediately, they reverted to their training and began to treat the most severely injured. They cut the netting that held a first aid kit – a 10-person kit attached to one of the EMT’s line gear. One crewmember, clearly in and out of consciousness, appeared severely injured. He had a massive head-wound that was bleeding profusely, and he was making difficult breathing sounds. *“He had a huge laceration across his face,”* one recalled. *“Lots of blood,”* another said. The cut was deep and wide – running from the eyebrow to a mangled ear. Unseen, there was a broken cheekbone (zygomatic arch) and damage to the ear canal. They started to bandage the head injury first. The closest EMT, now with some access to the ten-person medical bag, worked to stem the bleeding from the severe head wound. His own ankle was broken, but he knew that the head injury was more urgent. *“He was kinda slumped over, still out of it. Then he let out a painful breath, not agonal.”* Another remembered, *“I turned to look and I thought ‘c’mon f#\$*ing breathe, and then he was like ‘UGGHHH!’ and I was like that’s good he’s here still.”* Everyone had some degree of injury, ranging from cuts and bruises to a punctured lung. The crewmembers inside the cab were informally triaging, checking to make sure everyone was okay.

“It was a little after everything came to rest, I was trying to process everything and it’s like ‘Hbly S%it I’m alive!’”
- C-21B Crewmember

The next step was getting out. They assessed their options. They could see the emergency

exit window above them, but it was blocked by the failed shelf. *“I was trying to figure out how to get out of there,”* one crewmember said. The path out was across the broken windows that were now the floor of the buggy. The rear door, normally the primary route to enter and exit the buggy, was jammed by the bent metal of the crew compartment. They had landed so the hinges were on top, and the heavy door would have to be lifted and swung up and out. Two crewmembers inside were wrestling with the door, the debris of the crash and all the gear and equipment, until someone shouted:

“Kick that \$#?! door open!”

Outside, the Squad Leader from A Buggy had made his way down the steep embankment to the back door of the buggy. Several of the medical team, made up of crewmembers from C-21A, followed him down with medical gear. They were surprised by what they found. *“The details are fuzzy because my adrenaline was up,”* one recounted. Turning back in their seats to witness the violence of the crash, they thought that the result would be

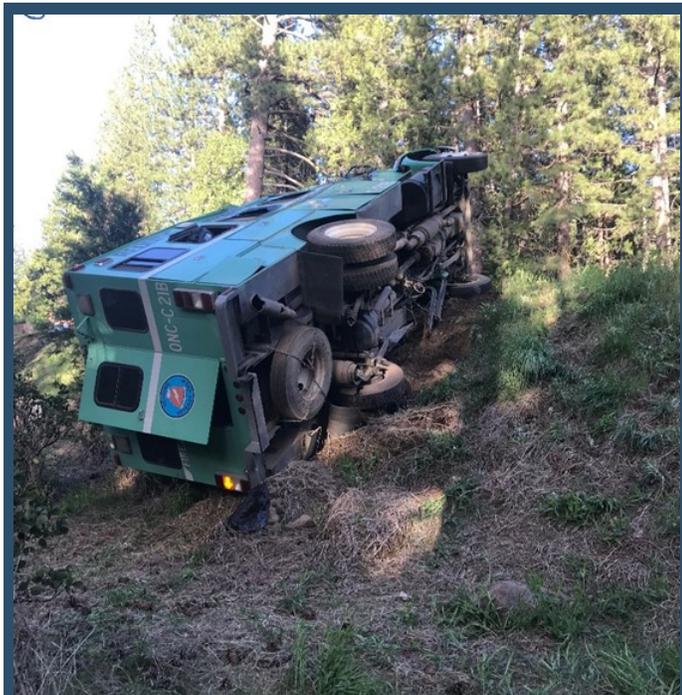


Photo 3. The heavy rear door of the buggy was forced open to allow the crew to exit. A broken shelf blocked the emergency exit window (second from rear).

disaster. When the door was eventually forced open, from one good kick inside and pulling from the outside, the scene they found was surreal. *“Even though it’s [the truck] on its side, everyone was kinda sitting there – calm. This is really weird...just like the medical scenario we had been through the week before.”*

The Superintendent felt relief once he counted ten of his crewmembers moving, talking, and helping each other. With everyone accounted

for, he made the decision to let the crew continue with medical care and began the notification process. His first notification was to his immediate supervisor, the Geographic Area Training Representative (GATR). The Superintendent started to filter the phone calls and texts from around the country as the news of the accident spread virally on social media.

For the A Squad Leader, the primary concern was getting everyone out of the buggy. It was perched on the road edge and embankment, its driver’s side pointed down but suspended

“I hadn’t even touched base with my family yet and it was already on social media.”

It is important to consider the approach to sharing sensitive information about others. Here are some tips into social media ethics and etiquette:

- Golden rule: treat others as you would like to be treated
- Social media is not agency notification. Consider delaying posts involving injuries and/or fatalities to allow time for families to be notified through agency channels
- Not all ‘news’ is verified. Consider the source of the information and review accuracy before posting.

several feet off the uneven ground. There was the possibility of the truck shifting more, as well as danger from highway traffic. The highway was elevated about twelve feet from ground level, making it impossible to see both. He recalled, *“No one could get out because of the way the buggy was on its side. And [injured crewmember] was kinda crunched into the corner getting his head wrapped...that was my initial thought – let’s get everybody out... just in case, get them out of the roadway, get them out of the truck and be able to assess everybody.”* The EMT from C-21B, on a broken ankle, was still wrapping his injured crewmate’s head. The A Squad Leader continued: *“Basically they had the bleeding stopped, I asked [the EMT] ‘Hey are YOU ok?’ And he answered, ‘I think my leg’s broke.’“*

They talked to figure out the best extraction plan. The door had to be held open as people made their way out. No one remembers who they saw first or who held the door open.

The A medical team helped to extricate the crewmember with the head injury and the B EMT with the broken leg first. The A Squad Leader/Lead EMT directed everyone to a triage area under a Ponderosa pine about thirty feet away.



Photo 4. The triage site was located away from traffic in a flat area.

The Redding IHC, working together, was spread across the accident scene. The folks from A Buggy had taken on several tasks – their captain was working with local government and had transitioned the IC role to Chief 17 from the Burney Fire Department. The captain had also called dispatch and relayed the news of the MCI. There were crewmembers at each end of the highway working traffic control, trying to stem the tide of onlookers from traffic and from a nearby trailer court. One A crewmember grabbed a fire extinguisher and checked on the status of the Lexus driver, who was trapped in her car. Although she was unable to exit her vehicle, her injuries were non life-threatening. He directed an onlooker to hold c-spine from the back seat and performed a medical assessment. The rest of C-21A helped with getting C-21B out safely.

An off-duty flight nurse had arrived at the triage site right away. She focused on the crew member with the head injury. The adrenaline masked much of the pain the patients would experience later. Some injuries were obvious, but concussions, broken ribs, and a perforated lung were less evident. In their matching green crew t-shirts it was hard to tell from the outside who had been involved in the rollover...and from the inside, those who felt less injured were still trying to focus medical attention on those with the most traumatic injuries. *"I'm fine."* was the reply from nearly everyone on A Buggy.

Once local responders arrived, the medical team from C-21A worked to backboard the crewmember with head trauma. He had several broken ribs in his back and a broken scapula - trying to lay down was brutal. Due to his pain level, he was eventually transported sitting up, braced on line gear and padded with sweatshirts. The crew had to carve steps out of the steep embankment to lift him up to the highway. By the time they made it up, the local municipal firefighters had extracted the driver from the Lexus. She was transported by the waiting medical helicopter, which had landed in the road a few hundred yards away. They loaded two crewmembers with possible head injuries into the waiting ambulance. They only made it a short distance before a California Highway Patrol helicopter arrived near the westbound ambulance. They transferred the crewmember with more severe injuries from the Advanced Life Support (ALS) ambulance to the helicopter. This transfer was lost in the communication chain. Later when he told his overhead that he'd been flown to the hospital, they did not believe him - they thought the painkillers had kicked in!

"The rapid response from the crew FOR the crew was truly taking care of our own"

- Assistant Director
Workforce Development
& Fire Training

On the road, the Superintendent made contact with Chief 17 (IC), who asked, *"Who are you and are you injured?"* He replied, *"No, I'm not injured, and I'm the boss!"* The IC replied *"Good! You're right where you should be."* Removing yourself to the 30,000 foot view can be a challenge when an incident occurs, but it is critical.

There was a second Multiple Casualty Incident within Shasta County, which had stripped out many of the medical resources in the area. The crew was split up among three hospitals in the Redding and Red Bluff area. When Chief 17 notified the C-21 Superintendent that he would have crewmembers transported to three different hospitals, he resisted the decision. He wanted all his crewmembers taken to Redding area hospitals for logistical support. He did not realize that once a Mass Casualty Incident is declared, local hospitals are alerted and they coordinate to provide the best patient care.

The crew overhead decided to self-transport the remainder of their injured. The Superintendent later explained, *"The nearest ambulances left were over an hour away, meaning two hours more before our guys got to the hospital."* They started towards Redding in a borrowed Forest Service pickup and the Superintendent truck. While they headed out, most of the C-21A module remained at the crash site until the B Buggy

Patient Transfer

In a Multiple Casualty Incident, when patients outnumber emergency caregivers, there will be inevitable compromises in patient care. This incident was no exception. The crew had many different options on issues that came up, but critically they maintained their composure and decision-making process. They focused on rapid extraction and transport to attempt to deliver their injured inside the 'golden hour.'

Some thoughts to keep in mind during an MCI:

- You do the best you can with what you have. This is an emergency.
- Make thoughtful and clear decisions.
- Patient tracking becomes difficult, especially if they are headed to multiple hospitals.
- Do not postpone critical care waiting for intermediate care – don't let perfect be the rival of the superb.

The most rapid path to care may be self-transport, but it is important to remember some injuries can have delayed symptoms. Try to keep medically trained personnel and equipment travelling with patients. If there are multiple vehicles or vehicle transfers, split resources so there is continuous patient care during transportation.

could be towed. There was one call to the trucks with instructions to split up the patients differently for transportation to the hospitals. The Superintendent truck and the pickup arrived at the hospital minutes behind the ambulance.

Hospital Liaisons

At approximately 1654, a dispatcher for the Shasta-Trinity National Forest had overheard radio traffic on the CALFIRE dispatch frequency. Working at the Interagency Dispatcher Center, she could hear the barely readable transmission that the Redding IHC had been involved in a vehicle rollover accident.

The dispatcher immediately notified the local Shasta-Trinity National Forest (SHF) Safety Officer, who

manages the hospital liaison program. This is standard forest procedure any time there is an injured employee. At approximately 1800, the Forest Safety Officer sent a group text to all the local hospital liaisons for availability. As a trained liaison, the dispatcher responded that she was available and began to transition from dispatcher to hospital liaison. Her initial assignment was to support patients arriving at Shasta Regional hospital.

The Regional Smokejumper Support Services Specialist, a second local hospital liaison, was driving home from work. Once she arrived she saw she had missed calls from the Safety Officer and the Geographic Area Coordination Center (GACC) manager. She also received the group text regarding the accident. She returned their phone calls. The Safety Officer told her Shasta Regional hospital had a liaison assigned and that she would not be needed. On her return call to GACC manager, he said that he would like to get her to the other hospital. She stated, *"I didn't realize they were separated."* Coordinating with the Superintendent, she responded to Shasta Regional Hospital to pick up two crewmembers who had been redirected to Saint Elizabeth Community Hospital in Red Bluff. Once she arrived there, she remained in place serving as the hospital liaison for the six injured firefighters at her location.

The Regional Training Technician was also called to act as a hospital liaison because of her close relationship with the crew. This incident would be her first assignment as a hospital liaison. The Regional Training Technician explained, *"They are my boys...I was*

scheduled to go to the hospital liaison course a week before the accident, but the course was cancelled.” She met the dispatcher at Shasta Regional Hospital who proceeded to, ‘show her the ropes.’ Since the hospital liaison position is informal, most learn through mentorship and on the job training. Together they supported four patients at Shasta Regional Hospital. One patient was transferred to Mercy Hospital and the Regional Training Technician relocated to provide support.

The Albuquerque Service Center (ASC) serves as the hub of the Forest Service Budget and Finance and also processes medical claims. All three hospital liaisons worked with one lead ASC contact to expedite claims and care to the injured firefighters.

The Notification Chain

At 1645, the Geographic Area Training Coordinator’s (GATR) phone rang.

Phil’s Story

A first-person perspective from a crewmember with severe injuries.

“We were cutting line first, went super solid. Just the first couple weeks with this crew we’ve been clicking pretty well. Our mod is pretty tight knit. I was the last one to drop a tree, it went pretty well. I hadn’t touched a saw since last season and it went well.

I was sitting very back on the right hand side. Far back passenger side. I heard something, I thought I heard someone yell “Impact!” I don’t know why that stuck with me, but that’s what I thought I heard. I leaned up in my seat to look, and I saw the car. The next thing I know, I’m struggling with the seatbelt. To get that off, cause like, I had impacted my ribs pretty hard. My shoulder and whatnot – I was having trouble breathing. I was a little bit in panic mode, with the not being able to breathe and being in there.

Everything had just kinda went black, until I kinda came to, trying to get that seatbelt off, and apparently falling on Pat. (Across the aisle and directly below) I was still suspended, and I remember jimmying with my seatbelt, and I kinda went black again and then I remember Brewer helping us to get out – him yelling at me, ‘just step on my back, just step on my back.’ (Phil had to step on another crewmember’s back to exit because the height of the door opening with the vehicle on its side was quite high.)

The breathing, I was a little freaked out by it. The not being able to breathe super well. Every time I took a breath it was painful. I was focused on that the most, but I remember feeling the blood running down my face, and I kept trying to figure out what was wrong with it. Dan (the crew EMT) kept slapping my hand away. I have no idea what’s going on – I’m trying to figure out what’s going on. Everyone is talking back and forth, trying to check on me. They seemed pretty freaked out, which definitely had an effect on me. I saw their faces and they seemed pretty grim. Just like trying to read what’s going on with me and seeing the worry on their face.

There were a lot of hands passing me around, trying to help me to get out. I don’t remember much. My memory started kicking back outside. They were trying to get me to a position of comfort, I was fighting quite a bit, just ‘cause there were a lot of hands on me. I kinda wanted space I guess. They were trying to figure out if anything else was busted, I remember taking off my shirt myself. I do remember that. I remember getting up,

getting my shirt off. My head was bleeding quite a bit. I remember Dan getting a bunch of bandages around my head. I remember the flight nurse (a bystander) coming over and taking over patient care. And then pretty quick it seemed like I was on the backboard getting passed up to the ambulance.

I remember ALS taking over, IV (Intravenous Therapy) going in. They started pushing some drugs, still a lot of pain, didn't really get better till I got on the helicopter. That flight medic took over on the helicopter and he helped manage pain a lot. It was a big blur of people. I was going in and out of CT (Computerized Tomography) scans and x-rays and stuff. They pushed some dye to clear me for a brain bleed. They were able to clear me for the c-spine too, and get that f###ing collar off me.

I saw folks from my forest, my supt. They asked about if I talked to my family. But they live on the east coast. By the time it was time to call my family it was late there. By the time it was time to let my family know it was released all over social media as a Mass Casualty whatever. I was trying to call my mom, finally got ahold of my dad.

Scapula was broken and I have four fractured ribs. They said that the ribs weren't too bad but that the scapula fracture was pretty gnarly. I had a zygomatic/orbital fracture as well. Concussion possibly. I've been passed through so many doctors at this point, getting lots of different tidbits."

Phil's Lessons Learned

- Remember to talk to your patient, they want to and need to know what's going on. By not explaining things to him, Phil's concerns increased. Take the time to talk to the patient as much as you can.

"That is one thing I really do remember - lots of people, lots of hands, and you're catching all these snippets of things going on around you. And no one was talking to me. It's like - I'm sitting right here. I'm awake, that was super difficult. Not sure what was going on, but I knew it was bad and no one was saying anything."

- We need to evolve our etiquette to keep pace with our technology. Phil was unable to let his family know that he was ok before the news was out on social media. Someone, in their desperate search for 'likes' announced to the world the worst news a family should ever receive.

"One thing that really chapped me, I hadn't made contact with anyone in my family yet, and there's already stuff out there (on social media) I know my Mom goes to worst case scenario and I hadn't been able to get in touch with them."

It was the Redding Hotshot Superintendent. "I remember thinking that it was an odd time to call." He answered the phone from his son's softball game, and the Superintendent relayed that they had been involved in a major accident and that one buggy had rolled. He [the Superintendent] was going to head back and would call once he was on scene. The GATR hung up and began making notifications to Northern California Geographic Area Coordination Center (GACC). Since the detailed NOPS Assistant Director (AD) was in his most recent contacts, he began with the most familiar phone number. With no answer, he called the detailed Geographic Area Coordination Center (GACC) Manager. Although the Manager responded, she was on leave and referred him to the acting Duty Chief (DC). The DC then completed all notifications as listed on the regional notifications list.

Meanwhile, the Superintendent called the GATR back to update him that all personnel were out of the buggy, there were injuries, and they would be transporting people to the hospital. The GATR drove back to Redding. He assumed the responsibility of making notifications to Fire Management Officers (FMOs) and tracking the locations of each injured crewmember. He also contacted the Regional Training Technician to act as a hospital liaison.

At 1715, the GATR received a phone call from the acting NOPS AD to define who would be the core administrative 'team' reducing the burden on the operations personnel on scene. They delegated duties to provide status updates to the region, assist with notifications, and filter incoming calls. The team was comprised of three members, the GATR, the acting NOPS AD, and the Assistant Director of Workforce Development and Fire Training.

Due to social media coverage within the first thirty minutes of the incident, NOPS was inundated with phone calls. *"People want, and sometimes need, information. We totally respect that. But our job is to provide intelligence and not to reiterate what we are hearing from unconfirmed sources. Valuable time is consumed on phone calls with those wanting information that could be spent validating the situation with those who are actually on scene. We absolutely have a responsibility to make notifications and that will happen when we have real intel."* NOPS tried to provide a buffer to the personnel who were engaged in the care and transport of the patients. He also fielded calls from national office personnel and told them that information would be coming directly from the regional office. This also provided as a buffer to give the Regional Office staff the time they need to inform the Regional Forester and to follow their notification procedures to the Washington Office. *"It feels like folks are in a race to notify the national office...this is totally understandable, but time is at a premium at the onset of an event like this. That time should be spent in support of those directly affected and in validating intelligence surrounding the situation."*

The Pacific Southwest Director for Fire and Aviation set up a conference call for the incident at 2000. During the conference call, the AD of Incident Administration made the suggestion to make Albuquerque Service Center (ASC) aware of the incident and have one primary contact person assigned. The AD of Workforce Development and Fire Training, already at ASC, implemented this recommendation. As a result, there was a lead assigned and all claims from the incident were processed under one team of caseworkers. This streamlined the claims and they were processed very quickly. The hospital liaisons had a direct link to ASC to provide the correct documentation for treatments and prescriptions.

The following day, May 1, a conference call was scheduled for 1200 hours. An invitation was extended to all Regional Foresters, and Forest Supervisors and Forest Fire Management Officers of the affected employees. The call provided a briefing from the incident and patient updates.

For the crew the process of healing and sorting out the rest of the season was just beginning. Their training had been tested by the incident, and they had come through it as a stronger crew. The damage was significant; they had accumulated a broken scapula, fibula, zygomatic arch and ribs. They had several concussions, cuts, bruises and black

eyes. A neck sprain and a pneumothorax (puncture of the chest wall) was also included in the list of injuries. The stitch count was in the hundreds. Many had ingested broken glass, and all involved from both trucks were shaken by how close things had been to a much more tragic outcome. As they took stock of their injuries and talked through the Critical Incident Stress Management (CISM) process along with the Facilitated Learning Analysis (FLA) there were several highlights they felt important to share:

- Universally, the crew credited their training with their successful response to the emergency. The medical training they had taken on was critical.

‘The training was very valuable; it made us work well together.’

‘Stunned and so proud when I opened that door. Helping each other, just like we trained.’

- A crucial contribution to the crew’s success was their cohesion. They had been working together for a few weeks and had spent a considerable amount of time together on and off duty. Everyone already knew everyone, and it helped limit the confusion and chaos. It also helped with the recovery and healing process.

‘It was truly impressive to see how cohesive and together we are’

‘Everybody had a job to do – and they just did it’

- There were design elements in the buggies that crewmembers felt made injuries worse: no cushioning on the storage shelves along the windows and lack of a well-designed 3-point harness/seatbelt in the rear of the buggy.
- It is common to hear “I’m fine” from firefighters with injuries, or to downplay the severity. Employees of our organization need to allow medical personnel to fully evaluate their injuries and report symptoms accurately.
- The crew also wanted to thank and acknowledge the help they received from all involved. Numerous cooperators from local municipals, neighboring forests and units, the local hospitals and Law Enforcement contributed at all levels.

‘The outpouring of support was incredible’

Positive Notes

The FLA Team wanted to highlight the important and significant positives that we encountered during our research. They are listed here to bring attention to the exemplary actions of several people who made this terrible day better.

- The Redding IHC has fostered a culture of safety: all crewmembers were wearing seatbelts, driving responsibly, and did everything possible to avoid the accident.
- The crew’s training and efforts to prepare for medical emergencies was outstanding. They had developed and received significant emergency training that had a direct contribution to the successful patient outcomes. The local instructor, with years of EMS time, helped prepare the crew for this accident and patient care.
- The cohesion of the crew, their overhead, and the agency overhead at multiple levels

are also contributing factors to the day's success. They should be commended for the relationships and partnerships they built to overcome several potential obstacles ranging from the medical to the jurisdictional.

- The rapid response of units who heard the call and threw themselves into providing solutions, from the EMTs and Law Enforcement Officers, to the hospital liaisons.
- ASC handled this emerging incident well. Having received early word of the MCI, they developed a centralized contact that routed all cases from Redding IHC and ensured they were taken care of quickly.
- A special note on the fantastic hospital liaisons. These folks volunteered without hesitation to act as advocates for injured firefighters and to help with their needs. They are a credit to our organization.

Moving Forward

Less than two weeks after the accident, the crew was loading back into vehicles for more training. They had an appointment with some survivors from the 1994 South Canyon Fire.

Every year Redding IHC, as part of their training mission, hosts the staff ride at South Canyon/Storm King. Though this year they would have a few participants hobbling along or moving a bit slowly, they were still determined to carry-on with the training opportunities for which they joined the crew. The injured crewmembers are healing and making plans for their return to full duty. The fire season is coming and the opportunity to be on a crew like this one are all too rare.

Facilitated Learning Analysis Team

Matt Holmstrom

Team Lead

Assistant Forest Fire Management Officer
Pacific Southwest - Six Rivers National Forest

Julie Buel

Team Member

Regional Training Specialist
Pacific Southwest

Lyndsay Alarcon

Subject Matter Expert

Chuchupate Helitack Superintendent
Pacific Southwest - Las Padres National Forest

Samantha Orient

Writer/Editor, Graphics/Animation

Initial Attack Dispatcher

Great Basin - Payette National Forest

