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KNOWLEDGE

AUGUST 2017

OFFICIAL SAFETY MAGAZINE OF THE U.S. ARMY

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U.S.ARMY

READINESS THROUGH SAFETY

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KNOWLEDGE

OFFICIAL SAFETY MAGAZINE OF THE U.S. ARMY

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Mission Statement:
The Army Safety Team provides the Army with safety and risk management expertise to preserve readiness through the prevention of accidental loss of our Soldiers, Civilians, Families and vital resources.

THIS MONTH CONTENTS

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Are You *Ready?*

ANASTACIO DALDE III
Nonionizing Radiation Division
U.S. Army Public Health Center
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On Aug. 21, 2017, North America will have the opportunity to view a total solar eclipse. It will be the first total eclipse in the continental United States in nearly 40 years, and the first coast-to-coast eclipse in a century. The eclipse will make landfall on the west coast at 10:15 a.m. (PDT) just north of Newport, Oregon. Traveling at more than 1,600 mph, the shadow will move across the country in just over an hour and a half before leaving south of McClellanville, South Carolina, at 2:49 p.m. (EDT).

A solar eclipse occurs when the moon passes between Earth and the sun, obscuring the sun — either partially or totally — from a viewer on Earth. Most people in North America will be able to view at least a partial eclipse, while those in some states will see a total solar eclipse. Figure 1 below shows the eclipse's roughly 70-mile-wide path through the U.S. as the shadow travels from west to east.

Viewing a total solar eclipse is a unique and worthwhile experience; but if not done correctly, eye injuries can occur. Most of us would never stare directly at the sun because we know it can cause permanent eye damage. During an eclipse, though, the lower light levels may tempt some to watch it without suitable eye protection. This, too, is extremely hazardous. Figure 2 below shows a retinal lesion caused by staring at the sun without proper eye protection. While most people gradually recover their normal vision within one to six months, some end up with permanent blurry vision and central blind spots.

Indirect viewing using the pinhole-projection method, illustrated in Figure 3, will be the safest way to enjoy this eclipse. NASA has put together an excellent resource showing how to make a pinhole camera using only cardstock, aluminum foil, tape and a paper clip or pin at https://www.jpl.nasa.gov/edu/learn/project/how-to-make-a-pinhole-camera/. This simple tool will allow eclipse viewers to experience the event without risking damaging their eyesight.

For those who still want to view the eclipse directly, special eyewear is needed to avoid injury. Eyewear, including eclipse, prescription and safety glasses and regular sunglasses, are typically certified to various national and international specifications. For example, the American National Standards Institute publishes consensus standards with specifications for prescription eyeglasses, safety glasses used for impact or chemical protection, and sunglasses. The European economic area requires CE (European Conformity) certification for eyewear. The International Organization for Standardization also provides certification of eyewear. Only ISO 12312 2 specifically addresses the safety of solar eclipse eyewear for direct viewing.

While many manufacturers claim their eclipse glasses are specifically made for safe viewing, our informal laboratory tests suggest that not all eyewear offers sufficient protection. Consider the following factors when purchasing solar eclipse eyewear:

- The best eclipse eyewear has the ISO 12312-2 certification (see Figure 4). Many of the solar eclipse eyewear manufactured in the United States meet this ISO standard. We tested 25 samples of eclipse eyewear and found the ISO-certified glasses consistently provided adequate protection required to view the sun during an eclipse. All of the ISO-certified eclipse eyewear had additional CE certification markings.
- Eclipse eyewear with only CE certification markings might not offer sufficient protection. We tested two samples of eclipse eyewear that had CE certification

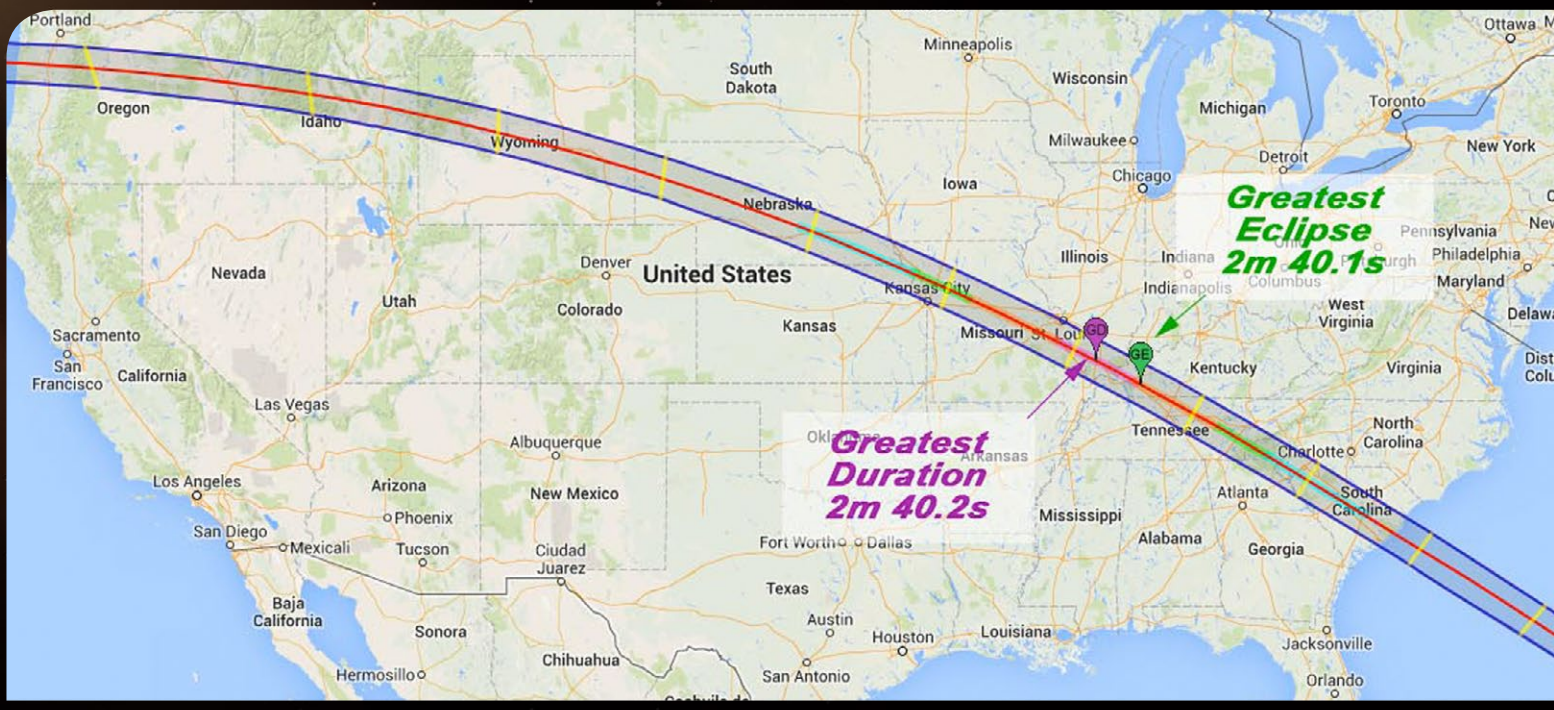


Figure 1: Eclipse Path. Image from: http://eclipse.gsfc.nasa.gov/SEmono/TSE2017/TSE2017fig/TSE2017-usa.jpg. Eclipse predictions by Fred Espenak, NASA Goddard Space Flight Center.

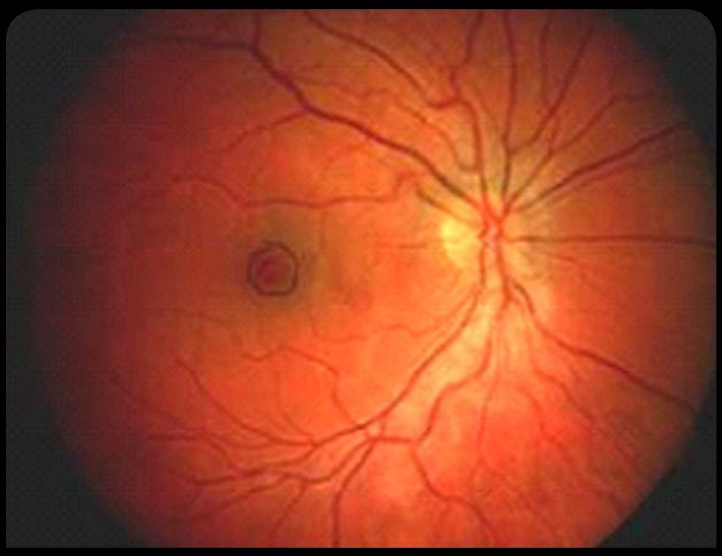


Figure 2: Damage to Eye by the Sun. Image provided by http://astronomyonline.org/SolarSystem/SunspotRotation.asp.

markings, but no ISO certification markings.

o The first sample, manufactured in China, did not provide sufficient protection in our laboratory tests (see Figure 5) when compared to the ISO 12312-2 standard.

o The second sample, manufactured in the United Kingdom, provided so much protection that it may be too dark for viewing the eclipse (see Figure 6).

• Some types of welding glass also offer sufficient protection for viewing an eclipse safely. Welding glass comes in different shade numbers which characterize its level of protection. The higher the shade number, the darker the lens and more protection provided at visible wavelengths. Use at least Shade 14 welding glasses to view the eclipse. Shade 5 welding glasses are commonly marketed as eclipse glasses, but these do not provide enough protection.

• Sunglasses and safety glasses used for everyday sun protection and for occupational safety eye protection (including Military Combat Eye Protection sunglasses) do not provide the minimum protection to directly view the eclipse (see Figure 7). Nevertheless, some safety glasses are marketed with the word "eclipse" in the name. Others advertise that the eyewear "Meets and Exceeds ANSI Z87." However, ANSI Z87 has no safety specifications for direct viewing of the sun. ANSI Z87 is a standard for occupational safety glasses for protection against impact, dust, chemical splash and welding.

• Avoid various do-it-yourself techniques for making your own eclipse eyewear, which can be found in instructional videos/websites on the Internet.

If you suspect you have experienced an eye injury due to viewing the eclipse, get an evaluation by an eye care professional as soon as possible. Symptoms might develop immediately or in a few days. The severity or type of symptoms may also change over time. The most common indications of possible injury are blurry vision and central blind spots. Color vision can also be affected.

In closing, we hope many people will be able to experience the upcoming solar eclipse. To view the eclipse safely, remember to use eclipse eyewear with ISO 12312-2 certification for direct viewing or the pinhole-projection method for indirect viewing. While it will be a magnificent event, it's not worth risking your eyesight. ■

Figure 3: Pinhole Projection Technique.

Figure 4: ISO Eclipse Eyewear.
Picture of 100 W light bulb through filter

Figure 5: CE Eclipse Eyewear China.
Picture of 100 W light bulb through filter

Figure 6: CE Eclipse Eyewear UK.
Picture of 100 W light bulb through filter

Figure 7: Sun/Safety Glasses Eclipse Eyewear.
Picture of 100 W light bulb through filter

It Can WAIT

SGT. 1ST CLASS BRANDON RENNER
4th Battalion, 160th Special Operations Aviation Regiment (Airborne)
Joint Base Lewis-McChord, Washington

I was driving on my usual route. Since I didn't have physical training that morning, my commute was during daylight hours, which I figured would be much safer. I had no idea what danger lay ahead.

I had driven this way to work for months, so I was comfortable with my route, which was a two-lane road with a limited shoulder and 50-mph speed limit. Besides the time difference, the only thing out of the ordinary was the school bus traffic on the road. Normally, I was already at work before the buses started running.

I was happy to see that a school bus was behind me. That meant I wouldn't be caught behind the multiple stops along this five-mile stretch of road. What I didn't realize, however, was this posed a danger I had yet to identify. The school bus stops were a few yards off the shoulder. But since the bus was behind me, the children were moving toward the street in anticipation of boarding their ride to school.

I was on my way to the gym to work out with a buddy before we went in to work. As I drove, he texted me, "Headed to the gym." I looked down, read the message and responded that I was also on my way by texting, "OMW."

The sound of my truck's tires rustling against the edge of the road snapped me back to reality. When I looked up, I saw the faces of those children waiting for the bus over my dashboard just 20 or so feet away. I abruptly corrected and regained traction with the road without harming one of those innocent children. The frightened look in their eyes will be engrained in my mind forever.

About a mile up the road, I had to pull off to regain my composure. I can honestly say I had never been so scared in my life. The thoughts after avoiding such a catastrophe ran though my head throughout the rest of the day and into the night. I am the father of two beautiful little girls for whom I live my life to protect. Those children at the bus stop were someone else's treasures. That morning, answering a text had been more important to me than their safety.

At any given daylight moment, there are 660,000 drivers in the United States using their cellphones or manipulating electronic devices while driving, according to the National Highway Transportation Safety Administration. Studies reveal that texting while driving makes a driver 23 times more likely to crash. A texting driver also spends 400 percent more time with their eyes off the road. Studies show that just reading a text takes a driver's eyes off the road for about five seconds. At the speed I was driving (55 mph), I could have traveled the length of a football field in five seconds. Since I responded to the text, though, my eyes were off the road much longer than five seconds.

My actions would have affected many lives had I injured or killed one of those children at the bus stop. We owe it to ourselves, families and everyone we share the road with to devote our full attention to driving. I failed to do that and am fortunate it didn't result in a senseless loss of life. ■

FYI

For much of the country, the new school year begins in mid- to late August. The National Safety Council urges motorists to put safety first when operating their vehicles in school zones and near bus stops. For more back-to-school safety tips for drivers, visit the NSC's website at http://www.nsc.org/learn/safety-knowledge/Pages/back-to-school-safety-tips-for-drivers.aspx.

A Frightening End

COMPILED BY THE KNOWLEDGE STAFF

It was back in the summer of 2000 and I hadn't yet gone to flight school. At the time, I was serving as a flight engineer on a CH-47D Chinook. Our mission was a simple, routine night vision goggle flight with a couple of very experienced pilots on the controls. During the brief, the pilot in command said he wanted to focus on slingload training and told me it was my night in the cargo hole.

During the startup, we confirmed all the hooks were operational and I prepared the cargo hole for slingload operations. As the flight progressed, everything seemed to be going smoothly and according to plan. Prior to beginning our slingload iterations, the PC landed next to the load and I readied myself in the cargo hole as the other flight engineer inspected the load. I reviewed my setup to ensure I wouldn't have any issues during the hookup, and the PC briefed the crew on slingload operations.

As we began to hover, I took my position in the cargo hole and called the aircraft over the load. With two experienced pilots flying the aircraft, the hookup went well. Since we were doing multiple iterations, we typically hooked up a load, came to a hover, placed the load on the ground, repositioned and did it all over again (aka "elevators"). Everything was going as planned. What could go wrong with something that's so simple and routine?

During the last iteration, the PC hovered over the load and, like each time before that evening, the hookup went smoothly. Then something different happened. As we were hovering with the load, the pilots began discussing techniques and failed to notice the aircraft had begun to settle and the load was back on the ground. I notified the pilot, but received no response.

As the Chinook began to drift, I noticed we were dragging the load. This went on for a minute or so with the load bobbing up and down and, from time to time, dragging across the ground. Finally, I announced the load was still hooked up and we were dragging it. The PC immediately released the load while the slings were still tight. Before I knew what had happened, I heard a loud bang and saw the center cargo hook fly into the cabin, bounce off the floor and fly back out. Luckily, I did something right that night and was positioned clear of the hook, saving myself the pain of getting whacked in the face. During the debrief, we determined the PC thought he had released

"EVERYTHING WAS GOING AS PLANNED. WHAT COULD GO WRONG WITH SOMETHING THAT'S SO SIMPLE AND ROUTINE?"

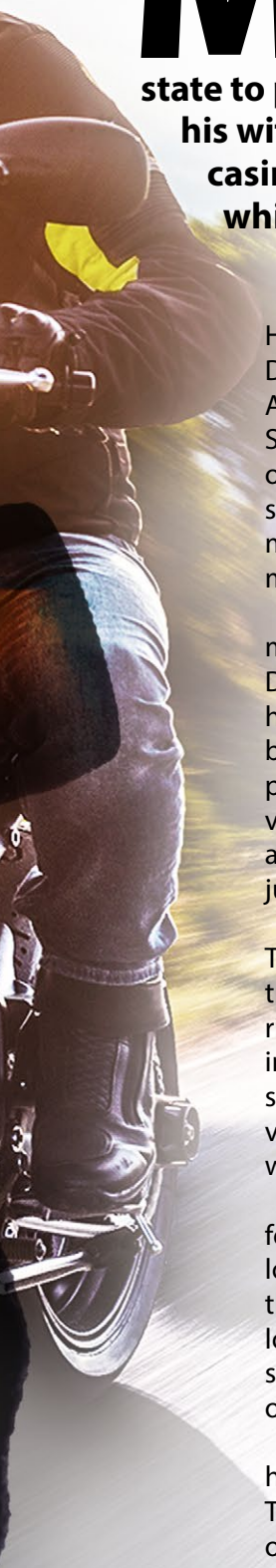
the load after setting it on the ground. For my part, I'd assumed he knew what was going on 30 feet behind him.

On this night, I let complacency and poor crew coordination win over my better judgment. I assumed because the PC was experienced that he knew what he was doing. Because of that, I let my complacency interfere with good crew coordination. I should have challenged the PC for a response as soon as I noticed the load was being dragged and not let it continue. Had I done that, I could have avoided the frightening end to that night's flight. ■

a MAJOR DISASTER

COMPILED BY THE KNOWLEDGE STAFF

Editor's note: Leaders engaging Soldiers is considered essential to preventing accidents. But what happens when leaders fail to engage each other? The following article is based on an actual fatal motorcycle accident. The names of the Soldiers have been changed to protect their privacy and that of their families.



Maj. Will Dean headed home on a Friday afternoon after completing his 42nd week of Command and General Staff College. He was looking forward to celebrating his second anniversary with his wife that evening. When he got home, he found out his ex-wife had driven from another state to pick up their 6-year-old daughter. Although disturbed by the news, he and his wife went ahead with their plans to celebrate their anniversary at a nearby casino. After dinner and drinks, Dean drove home and fell asleep on the couch while watching television.

About 9:30 the next morning, Maj. Charles Hicks, a CGSC classmate and fraternity brother of Dean's, rode his motorcycle to the Dean home. Although Hicks knew Dean wasn't Motorcycle Safety Foundation trained and didn't have an operator's license or insurance for his bike, he suggested they ride around the local area. About 45 minutes later, Dean got onto his Yamaha YZF 600RK motorcycle and followed Hicks onto the road.

During their ride, Dean and Hicks visited a motorcycle shop and a park. While at the park, Dean told his friend about the stressful visit from his ex-wife the previous day. When they arrived back at Dean's home about 1 p.m., the two friends parted company. Dean relaxed at home, playing video games and drinking until about 5 p.m. About an hour later, he got into an argument with his wife, jumped onto his motorcycle and angrily rode off.

Dean left the subdivision and accelerated. The street had a 35-mph speed limit and transitioned from a residential to rural area. After riding about three miles, Dean approached an intersection where a sign warned of limited sight distance ahead. A hay field obscured the view of cross traffic at the intersection, which was controlled by a two-way stop sign.

Traveling at a high speed, he was about 130 feet away when he realized the danger and locked his brakes to try and avoid entering the intersection. Despite leaving a 74-foot-long skid mark, he couldn't stop in time and slammed into the right-side passenger door of a pickup crossing the intersection.

The collision instantly killed Dean and threw him more than 60 feet across the intersection. The impact was so violent it bent the right side of the pickup's frame. The pickup then veered off the left side of the road and overturned two-and-a-half times before landing on its roof. The driver was ejected and severely injured, while the passenger was violently thrown around inside the vehicle. Neither was wearing a seat belt.

Passing motorists saw the accident and immediately called 911. An off-duty nurse happened upon the accident scene and checked the pickup's occupants. When one told her they'd been hit by a motorcycle, she searched the crash site and located Dean, finding him lying face down. A state trooper requested medical support, and a helicopter flew the driver of the pickup to a major trauma center while an ambulance transported the passenger to a local medical facility. Emergency medical service personnel checked Dean but couldn't find a pulse and contacted the county coroner, who pronounced Dean dead.

Why did the accident happen?

• The motorcycle wasn't out of control, but the rider was.

o Alcohol dulled Dean's perceptions, stealing the reaction time he needed to stop before entering the intersection.

o Anger dulled Dean's judgment, influencing him to speed and ride recklessly.

o Propelled by alcohol, anger and speed, Dean entered an intersection, collided with another vehicle and died.

• A buddy left a buddy behind. Hicks knew Dean wasn't properly trained, licensed or insured to ride, but encouraged him to do so anyway. Despite knowing the standards, Hicks ignored them and set up his buddy to die on the streets.

• The pickup's occupants failed to wear their seat belts. Even though they were hit by a much lighter vehicle, the impact was still severe enough to overturn the truck and eject the driver.

How could this accident be prevented?

• Soldiers must have the personal discipline to not drive their vehicles or operate motorcycles after drinking alcohol or while in an adverse mental state.

• Soldiers should exercise peer-to-peer leadership and not let violations of known standards go unchallenged.

• Seat belts must be worn at all times by all personnel in a moving vehicle. ■

More is better?

Riding with a group offers a fun, yet different dynamic than riding solo. Before your next ride with friends, consider the risk and develop a plan.

The U.S. Army Combat Readiness Center has the tools to keep you and your Soldiers safe, both on and off duty.

So are *YOU* ready ... or not?


IT
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Ship of Fools

BILL BARFKNECHT
Flight Concepts Division
Fort Eustis, Virginia

My friend and I had been planning all week to take his 16-foot catamaran sailing on Santa Rosa Sound, Florida. After I made the 3-hour trip to his house, he greeted me in his driveway and suggested we get going soon because bad weather was forecast. That should have been my first clue that this trip wasn't going to end well.

As we packed my trunk, my friend frantically searched for his life jackets, which he hadn't seen since last year. He finally decided they must be with the boat, so we hit the road. When we got to Santa Rosa, where the boat was being kept on another friend's property, I got my first sight of the "vessel." It was sitting on the beach amongst some weeds. This should have been my second clue. It hadn't been on the water in months and my friend probably spent about $3 a year on maintenance. Even so, the boat looked to be in good shape

until I opened one of the watertight compartments and was greeted by an army of carpenter ants. My friend said, "Oh, they do that every year!" I wondered, "Shouldn't a watertight compartment be ant-tight as well?"

We rigged the mast, attached the sails, loaded the cooler and started to push the catamaran into the water. I asked my friend, "Shouldn't we put something in this drain hole?" He replied, "Oh yeah, I almost forgot!" Then I asked him about the still-missing life jackets. He rummaged through his friend's garage and returned 10 minutes later with a couple of life jackets that looked like something from a 1960s. "These will do," he said as we donned the skimpy life jackets and set out on the water. That should have been my third clue.

At first, things went pretty well. We had the wind in our faces, the sun was overhead and it was turning out to be a great day. When we got to the middle of the sound where the shipping channel cut through, I saw my friend looking around on his sporty life jacket. I asked, "What's up?" He said, "I usually bring a whistle so I can get the attention of other vessels if need be. But no big deal; they'll see us." That should have been my fourth clue.

As we sailed, he told me about the time the wind was so calm he just drifted with the current, unable to control where he was going. He'd been stuck for hours a short distance from shore, but couldn't get in because he didn't have a paddle. I looked around and noticed we didn't have any paddles and mentioned that to him. He said, "Yeah, I was just thinking that myself. But the wind is blowing today and we're close to shore. We'll be OK." That should have been my fifth clue.

As we sailed across the water, he told me about the time the wind blew so hard one of the wires supporting the mast broke and the mast fell into the water. He drifted in rough seas until a passing boater saw him and towed him to shore. "Don't worry," he said, and assured me the wires were all new, so that wouldn't happen again.

We'd just cleared the shipping channel and started to tack to get back on course. As we came about, I heard a grinding noise and watched the mast lean over and fall into the water. My friend sat there in disbelief as the sails took on water and started to sink.

This was not good. We were drifting near the shipping lane without paddles or signaling devices. I also noticed we seemed to be settling deeper in the water. Apparently the water had found the same hole the ants used to get into the watertight compartment. At least we had life jackets.

We tried to clean up the mess of ropes and sails as we drifted toward the shore. We finally drifted into waist-deep water and dragged the boat onto the beach. I removed the drain plug and water began pouring out. I was right — we'd been sinking!

So what did I learn from this ill-fated boating trip? First, we should have checked over the boat closely before setting sail. The mast fell because a piece of hardware failed. Because of the carpenter ants, the boat nearly sank out from under us. Also, we lacked signaling devices and a paddle, which could have been disastrous if one of us had gotten hurt or the weather turned nasty.

Take a clue from me; use a little risk management when you go boating. Enroll in a boater's safety course online or through your Morale, Welfare and Recreation office or local Coast Guard Auxiliary. Here are some useful safety tips:

- Have your craft inspected annually and routinely check the boat yourself. You also can call the U.S. Coast Guard Auxiliary for a free safety inspection.
- Before setting out, get the latest weather forecast for your area. The National Oceanic and Atmospheric Administration broadcasts reports regularly to keep you updated. Take your radio with you and monitor the forecast.
- Know your boat's handling characteristics and don't go beyond your skills.
- Develop a float plan before sailing and tell someone where you will be going.
- Don't drink and boat. The lack of lanes and traffic signals on the water can make boating even more difficult than driving a car.
- In small boats, everyone should remain seated while the boat is in motion. Keep loads spread evenly and as low in the boat as possible.
- Wear your personal flotation device at all times. You may not have time to put it on during a sudden emergency.
- Take a portable communication device for emergencies.
- Carry additional safety equipment such as a paddle or oars, first-aid kit, bailer bucket or scoop, anchor and line, reserve fuel, and tools and spare parts.
- When boating at night, make sure you have a light that can be seen for 2 miles.
- Maintain a clear, unobstructed view ahead at all times. Scan the area ahead on either side for any dangers.

For more information on boating safety, visit the Coast Guard's website at www.uscgboating.org. ■

FYI

For a list of online boating safety courses, visit http://www.uscgboating.org/recreational-boaters/boating-safety-courses.php.

Check Your Wea

On my most recent deployment, I was assigned to Task Force ODIN to operate and eventually provide instruction on the MQ-1B Warrior Alpha unmanned aircraft system. Shortly after reporting to Fort Hood, Texas, each UAS operator was assigned to a small 10- to 12-Soldier element as they attended their airframe qualification course. They were then deployed to their theater of operation. All of these events would occur within a six- to eight-month period, so, for the majority of the personnel assigned, this was quite a unique experience.

Like the rest of the Army aviation world, the UAS element performs its mission planning and receives a mission brief as well as a weather brief. On this particular training flight, we went through the usual routine — mission brief, weather brief, preflight, engine run-up, trainee records review and briefing the trainee on his flight requirements. Finally, we were all ready to go.

We had thunderstorms to the north of us and also in our mission area. Since there weren't any imminent signs of danger in the weather brief, the crew thought nothing of it. After about an hour or so of instruction on the aircraft operator side (which is typically the left seat), we switched sides to the payload operator side (typically the right seat). It didn't take us long to become engrossed in the instruction and the ever-so-interesting tasks of the PO side.

We soon noticed that for some reason the video quality was slowly diminishing. What we didn't realize was that the grainy video we saw through the infrared lens was actually raindrops. We were so engulfed in looking at the ground that we forgot about panning the camera around to keep an eye on the impending storm!

It didn't take very long for us to realize this had the potential to be a highly dangerous situation. After updating

"WE WERE SO ENGULFED IN LOOKING AT THE GROUND THAT WE FORGOT ABOUT PANNING THE CAMERA AROUND TO KEEP AN EYE ON THE IMPENDING STORM!"

ather

CHIEF WARRANT OFFICER 2 NATHANIEL BARNARD
A Company, 2nd Brigade Troops Battalion, 3rd Infantry Division
Fort Stewart, Georgia

the mission coordinator on our predicament, the decision was quickly made to return to base. It's like the old saying: Better late than never! We asked the MC to get us a storm update in hopes we could get out of it and beat it home. It was a long shot; nevertheless, we needed to take it.

Unfortunately, our lack of situational awareness was to blame for our predicament. After going back and looking at the recording, we saw we'd been inside the storm for up to 15 minutes before we realized we were in trouble. The newly designated readiness level 1 operator at the aircraft controls got his baptism by fire that evening. He had the challenge of dealing with some extremely intense downdrafts along with a laundry list of other dangers that could have all been avoided.

By the grace of God we were all able to work together to fly the aircraft out of the storm and safely recover it by the time the weather arrived at the airfield. Miraculously, the aircraft came back without any damage whatsoever.

What lesson did we learn from this experience? Being aware of the weather when you're flying a UAS is an essential part of situational awareness. Just because things are calm where you're sitting doesn't mean your UAS is cruising smoothly in a cloudless sky. Think about where you're flying, not where you're sitting.■

It's a Mindset

CHIEF WARRANT OFFICER 2 EARL SCHLOTTERBECK
458th Engineer Battalion
Johnstown, Pennsylvania

When I went to work that morning, I never thought I would later be sitting in the emergency room with one broken hand and a piece of metal in the palm of the other. Complacency and overconfidence had won the day.

As a private, I joined the U.S. Army Reserve as a 62B (91L) construction equipment repairer and received training at Fort Leonard Wood, Missouri. Safety was highly emphasized and we were instructed regularly in the proper use of personal protective equipment and safe working procedures. When I reached my reserve unit, we received additional training on safety and safe practices.

I was more than adequately trained on safety procedures during maintenance operation, but I was still young and inexperienced. When I wore my uniform, I followed all safety and PPE requirements, lest I faced the wrath of my NCO. (I had great leaders who watched out for me and ensured I kept all my fingers and toes.) But my civilian experience was a bit different.

In my civilian life, I took a job at an emergency road service company after returning from Basic and Advanced Individual Training. The safety culture there was very different. Safety standards were rarely established and there was no enforcement or consequences for an unsafe act. It's no surprise that vehicle and equipment accidents were normal occurrences and injuries to personnel were commonplace. It was only a matter of time before an accident happened to me.

It was late afternoon when I received a dispatch to a service call along the interstate for a tractor-trailer with two flat tires. My shift was almost over and I had plans with friends that evening, so I began to rush to get out of the shop. I had a lot of items in the bed of my truck but no time to offload them if I was going to meet my friends on time. I tossed the new tires on top of the load when I noticed my portable tire safety cage sitting inside the shop doorway. There was no room left on the truck to load it. My training told me I needed to take it, but I was in a hurry. My supervisor told me to just go and call if I needed him.

When I arrived at the jobsite, the driver told me he had only driven about two miles from the time the tires went flat

"LOOKING BACK, THERE WERE MULTIPLE FACTORS THAT CONTRIBUTED TO MY ACCIDENT. OVERCONFIDENCE AND HASTE WERE THE TWO MOST NOTABLE."

to when he stopped. I began to work at a frenzied pace. The process was simple. I jacked up the truck and started removing the wheels like I was trying out for a NASCAR pit crew. I quickly changed the blown tires but never bothered to inspect the aluminum wheels on which they were mounted. Had I not skipped this step, I may have seen the deformation of the bead-seating area, the part of the wheel the tire seals against.

Having left my safety cage behind, I should have stopped at this point. However, I had changed countless tires before and was confident these would be no different. I leaned the tire up against my pickup and began inflating the first new tire.

To speed up the process, I removed the valve core in the valve stem to allow more air into the tire. I was kneeling in front of the tire with the extraction tool in my hand, preparing to insert it into the valve stem, when it happened. The aluminum wheel popped free from the tire with a loud explosion, lodging the core extractor in my left hand and breaking bones in my right. The force was so great that it shoved me into the travel lanes of the interstate. Dazed and disoriented, I radioed my dispatcher and told him what had happened. He notified emergency services, who took me to the ER.

Looking back, there were multiple factors that contributed to my accident. Overconfidence and haste were the two most notable. Having worked at the company for three years, I thought I had seen and done it all. In my mind, this was a menial task that warranted little attention. I failed to conduct a thorough inspection of the equipment I was servicing due to my complacency. I should have adhered to safety standards I'd been taught in the Army and applied them to my civilian life.

My list of transgressions is lengthy, but they gave me some important lessons learned:

- Slow down and think. Never rush a job. Working a few minutes longer is better than never making it home. The few minutes you might save just aren't worth it.
- Use your PPE and safety equipment. Your PPE can be the deciding factor between a close call and death. Don't chance it. Always wear your PPE.
- Practice safety both on and off duty. This applies to both active-duty and Guard/Reserve Soldiers.

This accident was a turning point. Afterward, I began applying safety to all areas of my life — both on and off duty. I realized safety is more than a brief you have to listen to before work begins. It's a mindset we should apply to all aspects of our lives. ■

'Leaning' in on Ac

June 6 marked the 333rd day Fort Riley experienced no fatalities involving private motor vehicles. This milestone has been realized despite the 55 accidents the Army has experienced with 60 Soldier fatalities during the same period. What is Fort Riley doing differently to reach its set goal of eliminating PMV accident fatalities and preserving the most vital resource of America's Fighting First? While there are many variables, approaching accident prevention from a "Lean" perspective may reveal the answer. Applying a management system philosophy to accident reduction may seem out of left field, but understanding the importance in being Lean in everything we do to reach our fullest potential has resulted in reducing avoidable risks and saving lives.

So what is Lean and how does it work in the realm of safety? In short, it is a process of solving problems to bridge gaps and make production more efficient. Lean is cyclic and the intent is to set goals, test processes, evaluate outcomes, analyze, learn and implement ways to improve. In this process, businesses increase productivity and affect their bottom line.

In safety, risk management is also a cyclic process that looks for areas of continuous improvement: identify hazards, assess hazards, develop controls and make risk decisions, implement controls, and supervise and evaluate. This process aids in developing appropriate training, reporting and interpreting trending data to communicate identified risks and arm Team Riley. With the knowledge on how to eliminate those risks — and make appropriate risk decisions at the critical, deliberate and strategic levels — the 1st Infantry Division and Fort Riley execute the Army Safety Program.

How have we "Leaned" in on accident prevention? Identifying the parallels in risk management that we can correlate to Lean processes reveals the answer:

Set goals

The strategic plan for the Army implies that Soldiers should embed safety into every operation whether they are on a mission or engaged in personal endeavors. The ultimate goal is to manage risks in life by being safe. Although the Army does not propose a finite set of goals on safety every year, the standards for safe operations outlined in regulations, policy letters and standard operating procedures communicate the intent that Soldiers are to be informed and accountable for risk decisions made on and off the battlefield.

Test processes

Goals provide a view of what we would like to achieve, but ensuring mechanisms are in place to ensure resources are maximized to prevent accidents and injuries requires the investment of the total team. Leaders play their part by ensuring Soldiers are properly trained in safe PMV operations, conducting safety briefings and "oak-tree" counseling, and periodically checking to determine if Soldiers are properly licensed, mentored and making good personal risk decisions. Soldiers engage in making sure their vehicles are inspected and in good working condition, following the guidance provided by leadership and assuming responsibility for their own risk decisions, as well as supporting their battle buddies. Law enforcement confirms the standards are being applied

FYI **For more information, contact the U.S. Army Garrison Safety Office at 240-0647.**

cident Prevention

DAWN J. DOUGLAS
Garrison Safety Office
Fort Riley, Kansas

consistently and issue warnings and penalties when indiscipline occurs.

Evaluate outcomes

Unfortunately, the best way to evaluate outcomes is looking not only at areas of success, but also areas where correct processes did not prevent a fatality. This is the case when we look at the last PMV fatality that occurred July 7, 2016. A 20-year-old Soldier died of injuries from a motorcycle crash when his bike left the road and struck a telephone pole. The investigation revealed the Soldier was wearing a helmet, had completed the required motorcycle training a month prior and passed a safety check ride before his leave. It appears the Soldier did all the right things, yet the outcome was not a favorable one.

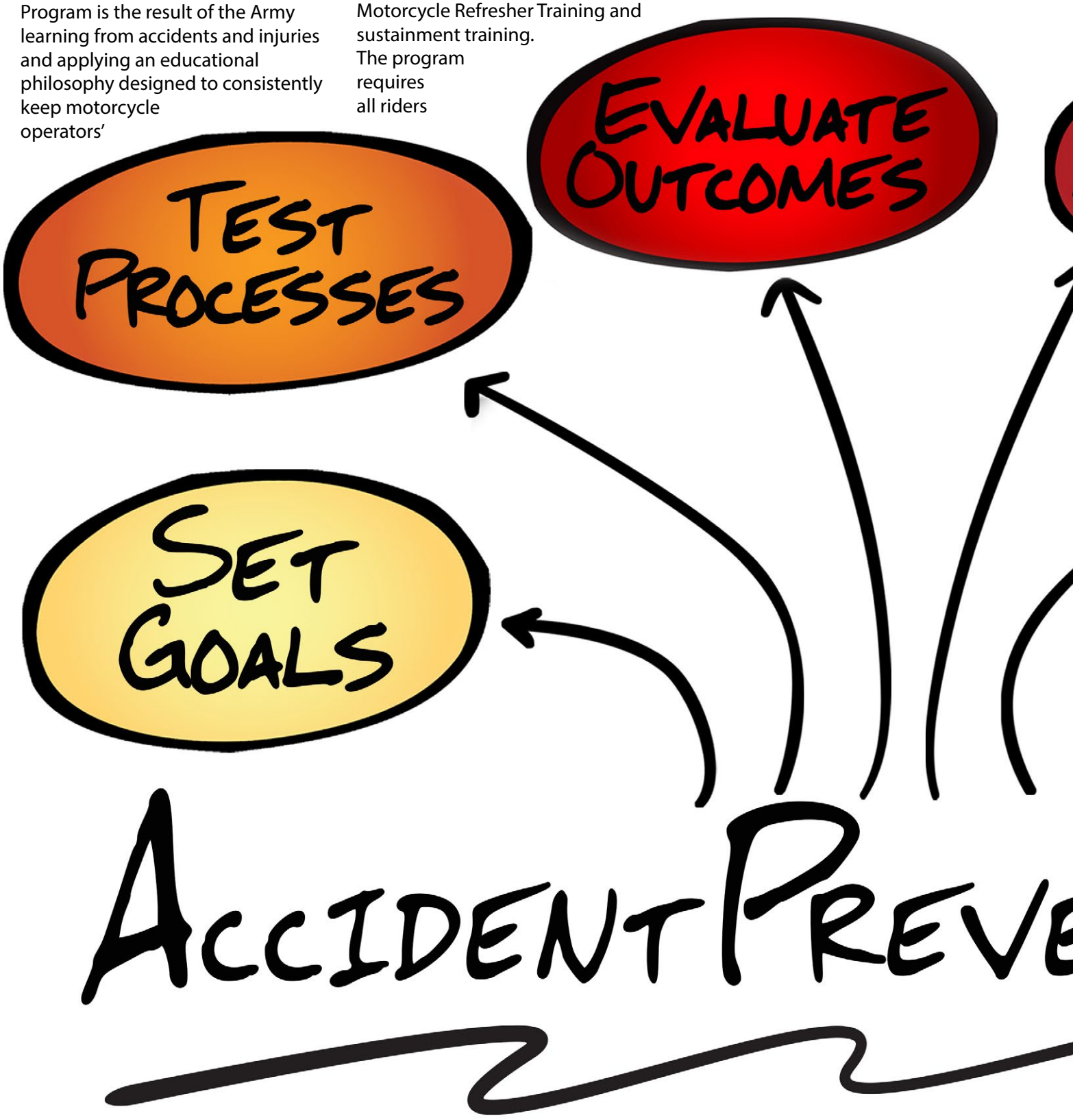
Analyze

Applying in-depth analysis to determine the root cause of accidents and incidents, to include near misses, allows leaders, Soldiers and law enforcement to look at accidents from a variety of angles to develop more efficient processes. Did the Soldier have enough driving experience? Was the Soldier speeding, complacent or exercising some other indiscipline? Did the Soldier recently return from a deployment? Were there environmental factors such as road conditions, precipitation or low visibility that contributed to the accident? Was the driver distracted or impaired in any way? Drilling down and peeling back the onion to reveal areas of improvement is key in analysis and critical in developing training and policies to help achieve more favorable outcomes.

Learn

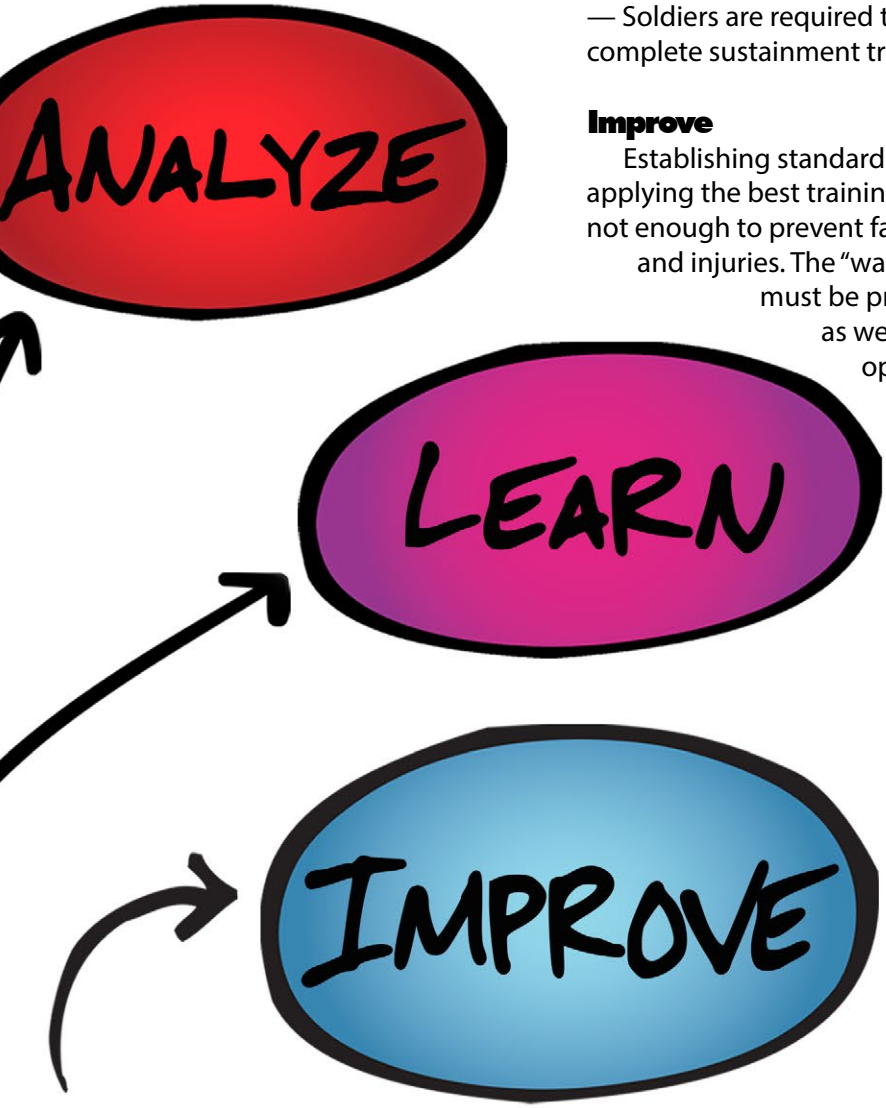
Using the analysis to identify best practices, as well as ineffective processes, is instrumental in continuously improving Army training. The Progressive Motorcycle Program is the result of the Army learning from accidents and injuries and applying an educational philosophy designed to consistently keep motorcycle operators' training current and sustain or enrich skills.

The program consists of the Motorcycle Safety Foundation's Basic/Experienced RiderCourse, Military Sportbike/Advanced RiderCourse, Motorcycle Refresher Training and sustainment training. The program requires all riders complete the BRC or state-approved curriculum for motorcycle operator safety training prior to operating their bikes. Based on the type of motorcycle owned and operated, Soldiers must complete ERC/



BRC-II or MSRC/ARC within 12 months of completing BRC.

The MRT is required for any licensed and endorsed Soldier owning a motorcycle returning from a deployment greater than 180 days. The MRT must be completed prior to the Soldier operating his or her motorcycle on a public or private street or highway, with the exception of riding to or from training. Finally, within five years of completing ERC/BRC-II or the MSRC/ARC — or five years of inactivity, acquisition of a new or change of motorcycle — Soldiers are required to complete sustainment training.



Improve

Establishing standards and applying the best training model is not enough to prevent fatal accidents and injuries. The "want-to" factor must be present as well. PMV operators must look to improve their driving skills through defensive driving courses and maintaining keen situational awareness. It's not enough to say, "We made it 333 days without a PMV incident so there must not be anything else we need to do to continue the success." Leaning in on accident prevention means we are constantly searching for new areas of improvement such as better roads, gaining more experience, engaging in training opportunities, updating risk assessments, listening to good ideas and learning from mistakes.

In the eight years we have been tracking Fort Riley's days without a PMV fatality, we have only achieved 333 days and beyond twice. That means we've had to reset the day to zero more than we've had an opportunity to celebrate the milestone. Resetting the day to zero is a sobering reminder that there is more work to be done. Seeing each day advance also teaches us a valuable lesson about "Leaning." We must have a plan in place to sustain growth and achieve improvement.

Safety is everyone's responsibility, and the 1st Infantry Division and Fort Riley prove daily it is a team effort to achieve 333 days without a PMV fatality. Let's continue to Lean in so we can reach 444, 555 and beyond and ensure no Soldier's life ends as a result of a preventable PMV accident. ■

MASTERING BROW

Helicopters today conduct operations in environments and at tempos far different from what was envisioned years ago. Brownout was inconceivable while patrolling the East German border back then. It has only been in recent years, with the wars in Afghanistan and Iraq, this problem comes to the forefront.

Dust landings — the effect of swirling dust and debris caused by the rotor wash during the landing of a helicopter — will challenge the best aviators. In heavy dust, brownout is not a question of "if," but "when." The "if" is a given, while the "when" is a factor we have little control over.

It's important to understand that the dust generated during the landing phase doesn't cause a true brownout until the vortices bring the heaviest dust through the rotor system. If you can be in a touchdown position before that point, your landing will be easier and much safer. Additionally, you must understand the direct correlation between the aircraft angle of approach and the rate of descent as it applies to the ground roll/run following touchdown. It's best explained this way: At one extreme, we can use a shallow approach angle, in which our airspeed is higher (with a touchdown at or slightly above effective transitional lift), our rate of descent is very low and our ground roll/run is long. That approach is relatively easy to master and has its place when landing to flat, unobstructed areas.

For illustrative purposes, let's say the other extreme is a 90-degree vertical approach angle. This theoretical approach would use zero airspeed and a very high rate of descent and result in little or no ground run. It would also be extremely difficult to perform. Again, this example illustrates the extreme ends of the spectrum. I am not advocating this type of approach. You can execute a safe and controlled dust landing with minimum ground roll/run to most areas using factors in between these two extremes.

Over the years, I have executed thousands of dust approaches while training others. During that time, I have learned dust landings using a steep side of a normal approach work best when landing to the toughest and dustiest landing zones. This type of approach is tough to perform, but I believe every aviator needs to master it.

Approaches using the steeper approach angle must be flown in concert with a higher rate of descent than that of a normal approach. By a higher rate of descent, I am not implying the aircraft has to literally fall out of the sky. Hardly so. While the brownout condition occurs without warning using the steeper approach, it reduces the opportunity for the dust to cycle through your rotor system prematurely. That decreases the likelihood of a brownout before you are landing assured.

In addition, these approaches require greater skill due to the timing factor involved with adjusting the controls for touchdown. The benefits, however, become apparent when landing to unimproved, dusty landing zones. This approach reduces the ground roll/run while allowing the pilot to see the landing area for virtually the whole approach.

The confidence to perform a dust landing with this type approach comes only through repetition with the benefit of a more experienced pilot or instructor pilot on the other set of controls. Most of this training can take place in a non-dusty area to reduce wear and tear on the aircraft. The final exam, however, must be in true brownout

VNOUT LANDINGS

RETIRED CHIEF WARRANT OFFICER 5 DENNIS MCINTIRE
Fort Worth, Texas

conditions. Only then can aviators know their skills are up to the task.

Surprisingly, I've noticed many aviators, especially those flying more powerful aircraft, tend to ignore the wind when determining their landing direction. Forgive me for stating the obvious, but this cannot be overemphasized: Landing with a tailwind forces you to land with a higher ground speed to avoid browning out prematurely. Remember "wind calm" does not always mean there is no wind. Just a few knots of wind can make all the difference in the world when it comes to your dust landing.

Try it yourself. Experiment with a tailwind and headwind dust landing under identical light wind conditions. You can use a quartering headwind/tailwind if you like. Regardless, you'll be amazed with the results.

Knowing the surface wind is especially important to me. In times where trusted indicators of surface wind were absent (trees, dust, smoke or water), I went through the effort of generating my own dust with a low approach to an area away from my final landing area. I performed the maneuver at a distance from my final landing area to avoid obscuring it prematurely for my later approach. This technique allowed me to accurately determine the wind direction and then consider it, along with other factors, in deciding my final approach method.

Formation landings add a measure of risk due to the increased chance of collision during the landing or go-around phase. Collective training is necessary to ensure individual crews work as one during their formation landing. While the landing techniques for formation aircraft are the same as those for single-ship operations, all aircraft in the formation must use the same approach angles, speeds and braking. In addition, formation landings in dust can be stacked down as a technique so the trail aircraft touches down first. All other chalks land in succession with the lead aircraft touching down last, thereby enabling all the aircraft to land in relatively clean air.

Another landing technique to use is an echelon formation so aircraft can touch down simultaneously. This is only one of many techniques that can be used if the landing zone is large enough and the ground commander doesn't mind their forces being spread out.

Limited visibility operations, whether they're in dust, sand or snow, are some of the most challenging environments an Army aviator can face. The primary duty of the PC is the safe operation of the aircraft while performing the mission. Flight technique is important while flying in these challenging conditions. However, crew coordination briefs, rehearsals and application, coupled with the correct flight techniques, are critical to both mission accomplishment and aircrew safety. Fly safely! ■

"OVER THE YEARS, I HAVE EXECUTED THOUSANDS OF DUST APPROACHES WHILE TRAINING OTHERS. DURING THAT TIME, I HAVE LEARNED DUST LANDINGS USING A STEEP SIDE OF A NORMAL APPROACH WORK BEST WHEN LANDING TO THE TOUGHEST AND DUSTIEST LANDING ZONES.

OUT OF OPT

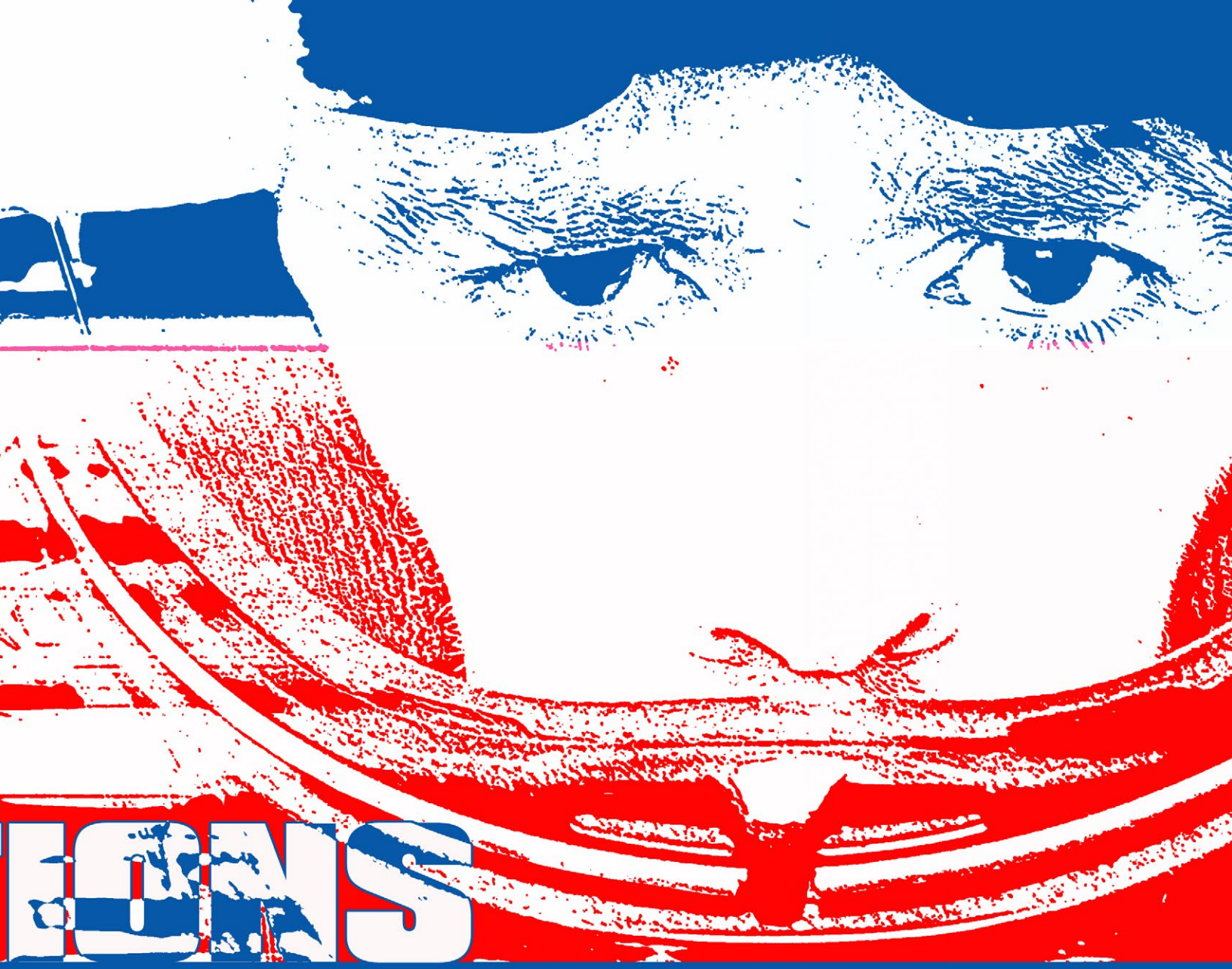
STAFF SGT. JORGE PEREZ
C Company, Task Force Marshall, 171st Brigade
Fort Jackson, South Carolina

The weather in South Carolina is often unpredictable. I found that out firsthand one summer evening as I left work with clear skies showing only to get caught in a gully-washer a few miles down the road. That wouldn't have been a problem had I been driving a car. On my motorcycle, however, it nearly cost me my life.

It was dark, and the skies didn't show any signs of inclement weather as I traveled along Leesburg Road, followed by McCords Ferry Road, on my 1994 Honda VFR 750. But as I turned onto Screaming Eagle Road, I rode into pouring rain. I soon found myself behind a utility tractor-trailer hauling a cherry picker, which began kicking up a great deal of water off the road that impeded my field of view.

In an attempt to create additional space between the trailer and myself, I slowed down. Suddenly, my rear tire hydroplaned when I rode through a shallow puddle. I instantly applied light pressure to the front and rear brakes — careful to not lock up the rear tire in an attempt to prevent it from sliding. Had I been forced to release the rear brake early, it could have caused the motorcycle to flip.

Shortly after floating the brakes, I felt the tires regain traction. Then I hit yet another water puddle, causing the rear tire to sway to the right before quickly swinging back



to the left. I instinctively scanned the oncoming traffic as the motorcycle drifted back to the right. I thought, "Jorge, the bike is going down. It's either your life or the bike."

With no other options, I pushed myself off the motorcycle with both hands and feet, like a paratrooper leaping out of a plane. I slid about 60 feet down the road, coming to a rest on the shoulder. My motorcycle barreled another 100-150 feet down the road, ending up on the opposite side in the tree line.

While some Soldiers may not see the need to wear personal protective equipment, mine likely saved my life. I was wearing my duty uniform, a helmet, reflective vest and gloves. In the midst of the heavy downpour, the gear was of great use.

Despite riding a motorcycle for about a year, I can honestly say the tutelage of my instructor for the Motorcycle Safety Foundation's Basic and Experienced RiderCourse was of great help. The fundamentals of safe motorcycle riding may have been the difference between survival and death. ■

"DESPITE RIDING A MOTORCYCLE FOR ABOUT A YEAR, I CAN HONESTLY SAY THE TUTELAGE OF MY INSTRUCTOR FOR THE MOTORCYCLE SAFETY FOUNDATION'S BASIC AND EXPERIENCED RIDER-COURSE WAS OF GREAT HELP."

Reducing the

VERONIQUE HAUSCHILD
Clinical Public Health and Epidemiology Directorate
U.S. Army Public Health Center
Aberdeen Proving Ground, Maryland

Does it seem like there are a particularly high number of knee, ankle and foot problems in your unit right now? Did it seem the ice and snow caused more slips and falls than usual this past winter? Have you been hearing about a lot of Soldiers in motor vehicle accidents lately? Do you have co-workers who had to take time off for a strained muscle from lifting heavy objects? How many Soldiers do you know who have hurt themselves playing sports, or developed a stress fracture from weeks of running and foot marching? How common is it for office workers in your organization to be diagnosed with carpal tunnel syndrome?

These scenarios represent the hundreds of thousands of unintentional injuries experienced by Army personnel each year. These injuries cost the Army millions of lost or restricted work hours and dollars. It's a common belief that injuries are just unfortunate accidents — the inevitable result of physically demanding jobs that require repetitive body motions or awkward positioning. But even though they are unplanned, many injuries can be avoided.

Because there are numerous conditions and individual variables that lead to an injury incident, it is difficult to provide one-size-fits-all prevention solutions.

"An in-depth review of the types and causes of injuries that occur at the local level is necessary to be able to successfully reduce injuries," said Dr. Michelle Chervak, a senior epidemiologist in the Army Public Health Center's Injury Prevention Division. "Prevention strategies, such as changes to the physical environment (engineering controls), leadership roles and procedural policy, and/or training and awareness, can then be prioritized and tailored to fit the local situation."

For example, slips and falls are a leading mechanism of injuries among active-duty Soldiers and often the result of icy conditions. If a review of relevant installation-level safety and medical data identify slips and falls as a leading mechanism of injury, the installation may want to improve its policies, equipment and/or procedures to better address ice and snow hazards. But a training installation in the southern U.S., with few ice-related falls, might instead find, after a review of their data, that a focus on training-related musculoskeletal overuse and heat-related injuries that commonly occur in Soldier trainee populations is the best use of limited prevention resources.

So what is the injury situation at your installation? How does it compare with other installations? With the overall

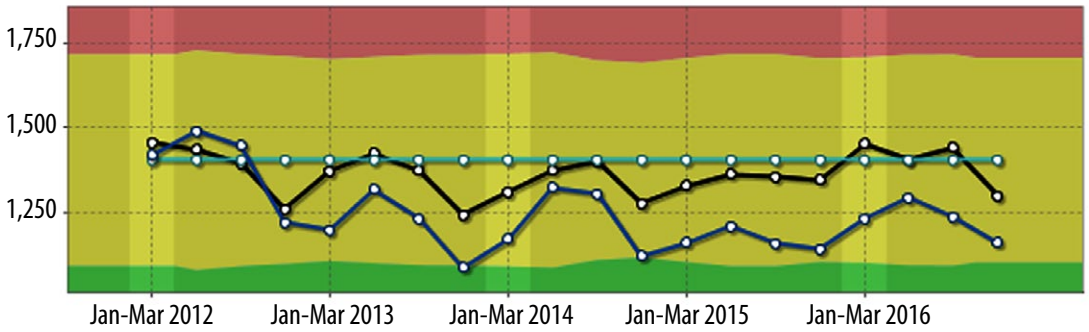


Figure 1. Example of improving injury rates over time for one installation (blue), compared to all-Army rates (black). The red/amber/green control bands are calculated based on the historical (2007-2013) mean injury rate (aqua line). This chart is one of five included in the active-duty installation injury summaries and is also available in the Army Strategic Management System.

Risks

Army? As a baseline for each installation to investigate its local injury situation, the APHC-IPD creates annual installation injury summaries. Two annual summaries are prepared for each installation and are detailed below.

Active-duty installation injury summaries

These summaries are based on data from Soldiers' medical records that are ultimately maintained in the Defense Medical Surveillance System. Any injury for which medical treatment is sought at a military medical facility or through TRICARE purchased care is captured. Injury rates encompass both traumatic injuries (such as traumatic brain injuries, fractures and sprains) and injury-related musculoskeletal conditions (such as low back pain, tendinitis and bursitis).

The installation injury summaries compare injuries to all other medical conditions for which treatment was sought and provide quarterly injury rates and trends for injuries that required hospitalization as well as for those treated on an outpatient basis, including the top five causes of injuries. In addition to comparisons to total Armywide injuries, rates are shown relative to "red/amber/green" levels to help identify when trends near or surpass the level of concern (see Figure 1 above). These active-duty summaries are available online in Public Health 360 (PH360) and the Army Strategic Management System. More-specific surveillance analyses can be requested from APHC.

Civilian installation injury summaries

These summaries are based on workers' compensation claims. The civilian summaries often represent a much smaller population. However, at installations with uniquely skilled civilian occupational populations, these summaries can guide commander, safety and preventive medicine efforts to address leading causes of the more severe injuries among their civilians. As noted by Maj. Luke Mease, chief of Preventive Medicine, Medical Department Activity Bavaria: "The civilian installation summary provides a greater level of detail about civilian injuries than we have been able to find or generate from any other data source." These civilian summaries are currently available from APHC by request.

During the development of these products, Chervak enlisted the assistance of safety engineer Dr. Anna Schuh to formulate the red/amber/green tool used to monitor active-duty injury rates — referred to as a statistical process control chart. This tool puts the data into a usable context for Army leaders. This good business practice fits well with the Army risk management process. Installation injury summary reports have only been provided by the APHC for two years, but a number of installations are already making use of this valuable resource.

"We've used the active-duty injury summary on multiple occasions when briefing leadership," said Capt. Erin Johnson, chief of Orthopedics and Physical Therapy, Kenner Army Health Clinic, Fort Lee, Virginia. "It helps show the importance of our injury problem before we get into the weeds. And the charts have provided motivation for our current injury prevention initiatives."

For more information on Army public health injury monitoring tools, visit the APHC website at http://phc.amedd.army.mil/TOPICS/DISCOND/PTSAIP/Pages/ArmyInstallationInjurySurveillanceReports.aspx. For requests or questions, contact the APHC Injury Prevention Division at usarmy.apg.medcom-phc.mbx.injuryprevention@mail.mil or call 410-436-4655/DSN 584-4655. ■

We've all been there — that "will-I-make-it?" moment. If you're lucky enough to have avoided that experience, then you've heard it from the mouths of others — probably with a few nervous chuckles thrown in. For most, it's the first time, and hopefully last, as well as a valuable learning point. I had one of those moments. Here is my story.

Flying on Fume

CHIEF WARRANT OFFICER 2 KEITH DOLLIVER
A Company, 5th Battalion, 158th Aviation Regiment
Ansbach Army Heliport, Germany

It had been about a week since we arrived at our operating location. We had flown the route daily, some days with multiple turns, and had a good lay of the land. We were flying humanitarian relief missions and would launch from our airfield, fly up to 40 minutes to a remote staging area, pick up patients and fly them to a Navy hospital ship a few miles offshore for surgery. Given the remote area we were operating in and the distance to our airfield and refueling, our UH-60L was equipped with two full crashworthy external fuel system tanks. We were trained and familiar with CEFS and it was common knowledge that you could expect to get about 4.5 hours of continuous cruise flight from a full bag of gas. Our mission profile had us flying hops of seven to 10 minutes from our staging area with substantial ground time for passenger loading and unloading. This gave us significantly more station time.

We'd been conducting this mission for a week and routinely refueled and swapped out crews around the five-hour mark. Normally, by the time we landed (at the five-hour mark), we still had over an hour of fuel remaining and it was never an issue. This particular day, though, we had an early show. That made fuel, not time, our limiting factor. We departed as on any other day, but with an added eye on fuel checks. I did the routine fuel checks as we entered our mission profile, then closed out and continuously monitored our fuel during the mission.

The five-hour mark was drawing near. According to our fuel numbers, we had about an hour and 20 minutes of fuel remaining. We wondered, "Do we have time for one more load?" We decided we had enough time to take another load of passengers out to the ship and then head back to our airfield for refueling. According to our fuel checks, we'd still have about an hour's fuel remaining after we dropped off the patients. Feeling confident, we decided we were good to go.

After dropping off the last patients, we proceeded back to the airfield. I started another fuel check for the flight back and closed it out after 15 minutes. This time, however, I noticed we were burning fuel at a slightly higher rate. No big deal, I thought; I'd just continue to monitor and we'd be

"HOW COULD THERE HAVE BEEN SUCH A BIG CHANGE IN OUR BURN RATE ON THAT LAST HOP?"

fine. Ten minutes later, we were still burning more fuel than expected, further eroding our reserve. We were 10 minutes away from landing and down to 400 pounds of fuel. For anyone who's ever flown with CEFS tanks, you know that's enough to be nerve wracking.

We crested the last hills and entered the city limits. By then we were within five minutes of landing, but we also had less than 300 pounds of fuel and still needed to overfly the city to reach the airfield on the far side. Given our situation, we started looking for places where we could make a forced landing and also scanned for the best route around the city. We decided to skirt the city's edge and follow the beach. If we had to put the Black Hawk down, that's where we would do it.

With between 150 and 200 pounds of fuel remaining and both fuel-low caution lights flashing, we were cleared for landing. We flew the straight-in approach down the runway and proceeded to our ramp for shutdown. By that time, we had between 90 and 120 pounds fuel remaining on the fuel gauge. Once we landed, there was some nervous laughter and a few chuckles — but at least we were safe.

We talked about what went wrong during our crew after-action report. When we launched on that final mission, we had plenty of fuel, plus a reserve. We'd been continually doing fuel checks that day during our earlier flight legs and thought we knew what to expect. So why were things so different on that last leg?

As it turned out, we did our earlier fuel checks while flying short legs between the ship and shore or in holding patterns at maximum endurance airspeed waiting for the ship's deck to be cleared. We didn't think to note the fuel burn rate from our first long flight in the morning as a guide for the fuel required to get back.

What about our common knowledge of CEFS burn rates? We had hundreds of hours in CEFS aircraft, so we should have known what to expect. When I checked the fuel that day during our hops out to the ship and back, everything appeared normal. How could there have been such a big change in our burn rate on that last hop?

The answer, as it turned out, was simple. On our earlier legs, we flew slower and, as a result, burned less fuel. However, on the last flight leg we were operating overwater with passengers onboard. As a safety egress precaution for overwater flight, we had opened the cargo doors on both sides of the aircraft and removed the cockpit doors. That created extra drag, which increased our fuel consumption. Our mission nearly ended in catastrophe because we didn't take that into account. The only thing that saved us was operating by the book and ensuring we had the required reserve when we left the operating area.

What about you? When you plan your reserve, do you take into consideration that the flight profile for your return flight may be different than your mission profile? Remember, you might run out of fuel, but you'll never run out of gravity. ■

What's Holding Up Your Car?

DURAND DURGA
U.S. Army Armament Research, Development and Engineering Center
Picatinny Arsenal, New Jersey

Saturday was my day for making repairs on my car, and I'd been having problems with my old, rusty brake rotors. Every time I'd hit the brakes, the steering wheel would vibrate. I wanted to put an end to that, so I bought some good slotted and drilled replacement rotors. I gathered all the tools I needed — including a jack, wrenches, sockets and screwdrivers — and went to my garage to get started. I'd changed rotors on several cars in the past, so I basically knew how to do it.

The first thing I did was loosen the lug nuts on the wheel and raise the car with the new hydraulic jack I'd bought. Then, I took off the wheel and placed it beside the car so I could begin removing the brake caliper. After I got it off, the phone rang inside the house and I got up to answer it. After talking on the phone for about five minutes, I went back out to the garage and was surprised by what I saw. The jack had failed and one side of the car was sitting on the floor! I could see where hydraulic fluid had leaked out of the jack. Luckily, the car was resting on the jack's body so nothing was damaged.

I was shocked. When I got over my surprise, I used a different jack to raise the car again and finished replacing the rotors. As soon as I finished, I bought a couple of jack stands and a new hydraulic jack.

I learned a valuable lesson that day. I realized that safety isn't just for when you're on the road; it also applies when you're doing repairs. Since then, whenever I work on my car, I use the jack stands as fail-safes and, for extra measure, place a wheel beneath the car.

Thinking back on that day, I could only imagine what would've happened had I been under the car. Had the jack failed then, I would've been injured or possibly even killed. I'd always heard stories about how dangerous it could be to work on your vehicle, but I'd never thought something like this could happen to me. After all, my hydraulic jack was new and it failed.

I now take all the proper safety precautions to protect myself and others when I work on my vehicles. I would encourage anyone else who does their own auto repairs to plan for safety in the process. After all, should your jack suddenly get the drop on you, the last place you want to be is underneath 3,000 pounds of car. ■

BY THE NUMBERS

If you think what happened to the author is a rare event, you're wrong. Over the past decade, there have been several reported off-duty and on-duty accidents involving jacks and jack stands. In one accident, a Soldier was killed while performing maintenance on an M1114. The vehicle fell off the bottle jacks, pinning the Soldier underneath.

Every Friday, our company commander would bring us together for his standard safety briefing. He gave the same boring speech week after week. In fact, I'd heard it so many times that I could say the words before he spoke. And this was just the beginning of what seemed to be a continuous echo.

We Finally Got It

ERIC A. WASHINGTON
U.S. Army Europe Safety Office
Heidelberg, Germany

After the company commander was finished, the first sergeant stood in front of us and basically gave the same message. My platoon sergeant would then follow by saying the same thing — though he would put his spin on it by telling us a war story about a previous accident. He'd finish with, "If I hadn't been wearing my seat belt, I wouldn't be here telling this story today." But that, too, was repeated every week, as if none of us were present at the previous safety brief. The entire process took about 45 minutes to complete. I remember thinking those safety briefs were a huge waste of time. Then one week the brief was a little different.

Our unit was conducting a training exercise at East Range, the Army's primary training spot at Schofield Barracks, Hawaii. Our commander called for an informal formation while we were eating dinner and reprimanded us for not wearing our Kevlar helmets in military vehicles. He said he was concerned because he didn't seem to be reaching us with his safety messages.

Some Soldiers replied that the helmets hurt their heads. At that point, we'd been wearing them for four days. They also complained that the helmets were always falling down over their eyes, obstructing their vision.

Undeterred by this testimony, the commander reinforced his previous position and promised to punish anyone caught without their Kevlar. I was really confused because, at that time, our company had

"I DON'T KNOW WHY IT TOOK SUCH A TRAGEDY TO CONFIRM WHAT OUR SUPERIORS HAD BEEN TELLING US ABOUT WEARING OUR KEVLAR AND SEAT BELTS."

a pretty good safety record. We hadn't experienced any major accidents or injuries during the entire year I was there. Due to the commander's warning, though, no one was caught without their Kevlar during the last week of that field problem.

Our next training exercise was a few months later. We'd been in the field for about two weeks, and everyone was looking forward to returning back to the garrison environment. Even though we still had a week to go, you could feel the complacency creeping in. Everyone seemed to have a careless attitude.

The company set up a racetrack formation and made evenly spaced laps around it for a night smoke mission. It was a routine mission we'd practiced numerous times during this and previous field exercises. About an hour into the mission, I saw a smoke vehicle veer off the track and head aimlessly across a field, but I didn't think it was a big deal.

After we finished the mission, we headed back to our camp. The relaxation and rest didn't last long, however. Later that night, we learned a Soldier in our platoon had died in that runaway vehicle. A subsequent accident investigation revealed he'd struck his head on the smoke control panel, causing the fatal injury. Stunned, we were briefed that if he'd worn his Kevlar, it would have saved his life.

I don't know why it took such a tragedy to confirm what our superiors had been telling us about wearing our Kevlar and seat belts. That accident changed the unit's whole attitude. Our sergeant's old war stories were now our reality. We finally got it, but we learned our lesson the hard way.

Too many of our Soldiers have died in rollover accidents in theater. Many of these deaths could have been prevented if they'd only worn their seat belt or helmet. Pay attention when your commander and other leaders give their safety brief. Years down the road, wouldn't you rather be that platoon sergeant telling your war stories than a dead Soldier who didn't listen. ■

Written in Flame

It was a clear, sunny morning and I was the pilot in command of an OH-58C Kiowa. Our task was to follow and observe two AH-64D Apache helicopter crews during combat training. I was in the right seat; to my left was the instructor pilot — an experienced attack pilot who was evaluating the performance of the Apache air weapons team. The 64s flew in support of ground units as part of a large-scale scenario. Since it was already a warm day, we had removed both doors from our aircraft.

We had been following the Apaches ever since sunrise — nearly three hours. They had been flying security for a convoy followed by providing air cover for Soldiers doing a cordon-and-search. When lead announced, "Bingo," we headed to the forward arming and refueling point. Anticipating a routine quick turn with hot refuel, I thought we would be taking off again within 10 minutes. I had experienced countless hot refuels without incident in both the Kiowa and Apache, and this time seemed no different.

We landed on the far right at the number one point and had the Apaches to our left at points two and three. The refueling HEMTT was to their left off in the distance. Due to the position of the two Apaches, the personnel at the refuel truck could not see our helicopter. This problem was normally dealt with by positioning a Soldier at the fire extinguisher to watch us and send hand signals to the refueling personnel at the truck.

After landing, I brought the helicopter to flight idle as usual and casually reminded my PI of our emergency egress procedures, should the need arise. Perhaps 30 seconds later, I smelled an overwhelming odor of JP-8 fuel. I immediately yelled, "Get out! Get out!" and quickly moved through my emergency shutdown steps. Before I had completed those steps, I looked over my right shoulder through the aft Plexiglas window and was surprised to see fuel flowing down the entire window and door exterior. Without warning, the Soldier with the refueling hose had pulled the nozzle from the aircraft fuel port without shutting off the flow.

Quickly moving through my shutdown steps, I again looked to my right through my open doorway (remember, the doors were off). I saw the Soldier soaked in fuel from head to foot standing five feet away, pointing the spraying nozzle in my direction. I watched as a steady stream of jet fuel sprayed under my seat and onto the floor and chin-bubble beneath my legs and feet. I soon found out he had also sprayed fuel on the engine cowling and into the engine compartment.

Moving rapidly, I was able to shut down, unbuckle, disconnect and move out of the cockpit. Fortunately, my PI had followed my briefing instructions and was already well clear of the helicopter. As I ran to the 11-o'clock position under the still-spinning rotor blades, I saw the fuel-soaked refueler still dousing the right-side of my aircraft. I estimated that lasted about 20 seconds.

My PI and I spent several minutes regaining our composure and then called our boss and others who obviously needed to know what happened. Luckily, no one was injured. Not wanting to slow the ongoing training, we began making arrangements to continue the mission with a replacement aircraft. About 40 minutes after the incident, our replacement helicopter arrived and we were re-briefed and continued the mission. A senior NCO from the training team was aware of the situation and was steering a staff sergeant at the FARP to deal with

what had transpired. Confident the problem would be resolved, we departed behind our two Apaches.

Another bag of fuel later, we found ourselves back at the same FARP at the same three refuel points as before. That is when details of the earlier event became even clearer. First, I realized no one had been manning the fire extinguisher at our one-o'clock position to send fuel cut-off signals to the personnel at the fuel truck. Second, I found out the fuel-soaked refueler simply walked off without getting help or informing anyone of what had happened.

However, what really got my attention was what was happening now during our second refueling. Despite the significant fuel spill that happened on our running helicopter only a couple of hours before, the three Soldiers now fueling my aircraft were a specialist (who was there during the spill) and two privates. Apparently, none of the officers or NCOs responsible for fueling operations had taken any interest in what had happened. During our second turn, our fuel cut-off signals were not readily understood and fueling continued for 15-20 seconds after we signaled to stop. I was stunned to see such a lack of leader interest after all that had transpired.

Fortunately, we all walked away from the incident without serious injury or loss of equipment. But I left having learned some important lessons:

- Leaders must be involved and aware of what their Soldiers do.
- A lack of training and supervision can quickly end in catastrophe.
- Complacency can lead to a routine situation becoming uncontrolled.
- Communication of hazards to leaders is essential if a fix is to occur.

I believe that a substantial part of that last bullet rested on me. Although I spoke with the training NCO shortly after the incident and eventually submitted an occupational hazard report, I still had not properly dealt with the immediate problem. I had assumed the FARP training NCO had handled the situation and drove on. What I should have done was immediately stop the training and let everyone know we had a problem that needed attention. I should have then followed up to ensure the correct people were informed, involved and taking appropriate action.

I'm grateful this story was written in ink and not in flames. But how close did we come? I don't want to know. ■

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